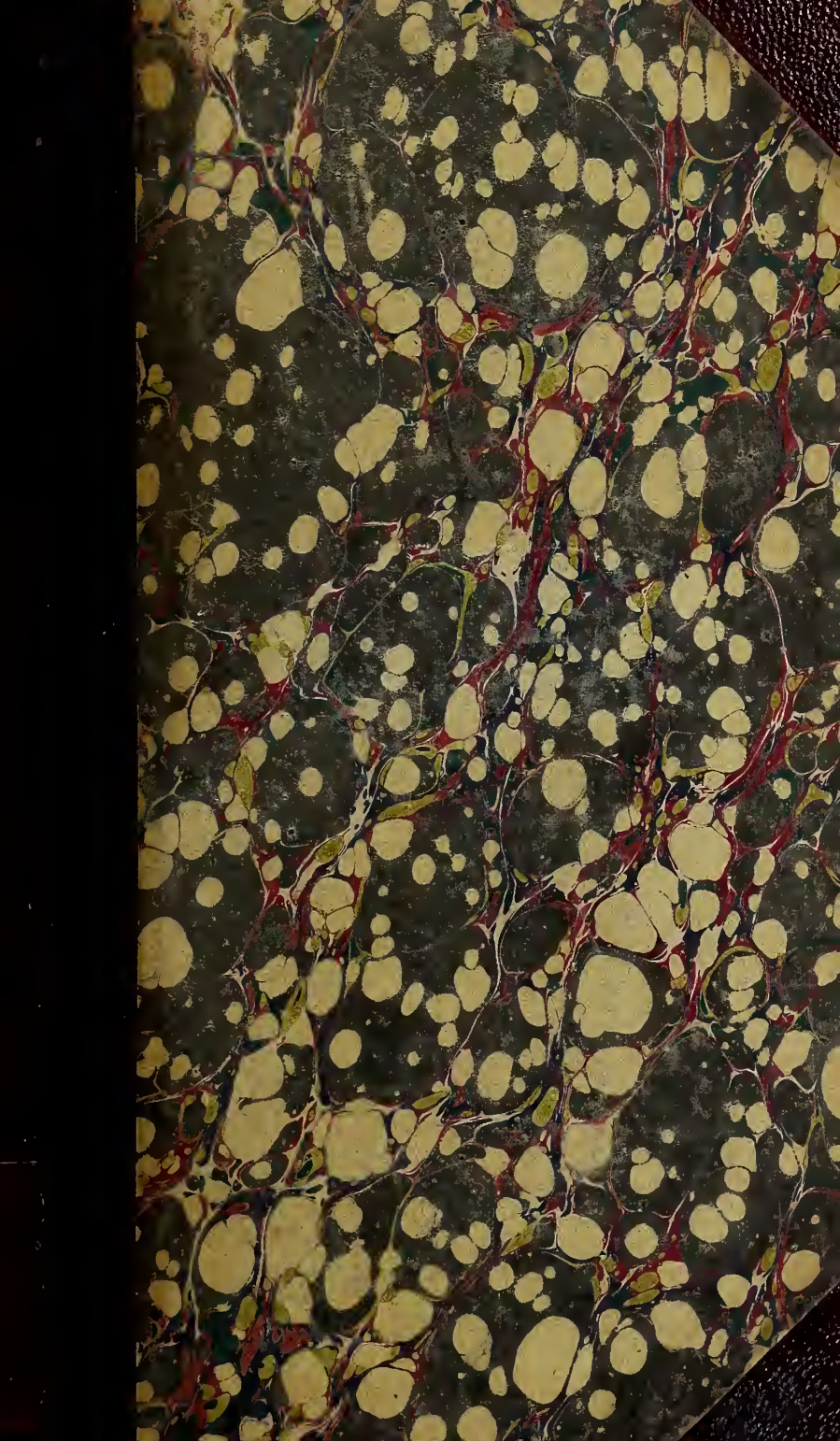

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Notes on Ancient Temples and other remains in the vicinity of Suddyah, Upper Assam.—By Major S. F. Hannay. *Communicated by* W. Seton Karr, Esq., *Under-Secretary to the Government of Bengal.*

Being desirous of making some researches in the jungles north of Suddyah for the remains of the former inhabitants of that section of Upper Assam, I took the opportunity of my yearly visit to Laikwah, to make excursions in the different directions pointed out by the villagers as leading to temples, tanks, and other remains of a people different in every respect from the present races inhabiting the country, and who are associated in their ideas with the Demigods and Deotas of ancient Hindooism.

Bishmook Nuggur.—This is a Hill Fort; built according to the traditions of the people of Upper Assam, by a rajah of that name (Bishmook), whom the Hindoostanees appear to identify with Bheekrum, rajah of Koondilpoor, the father of the celebrated Rúkhmúni. It is situated at the foot of the mountains nearly north of Suddyah, between the Dikrung and Debong rivers, and may be distant about 16 miles.

In proceeding to this Fort, we passed over the Suddyah plain in a northerly direction, and at a distance of about six miles came out on the Dikrung river, up the bed of which we continued our course on elephants, till the morning of the 3d day, when we reached the hills. The route was then on foot, through the tree jungle on the right bank of the river, winding along the tracks of wild elephants (but more frequently obliged to cut our path) for about two hours, when we found our-

selves at the foot of a steep ascent of 80 or 100 feet, up which we scrambled to a fine piece of table-land covered with splendid timber, amongst which we observe the Jack, Toon and Tchanm. Here our guide, who by the bye had never seen the Fort, said we had reached it, and mentioned that the tract of table land covered with various fruit trees extended inland to the foot of the Guroee mountain.* No vestiges of architecture were visible however, and we were thus disappointed as in the absence of any knowledge whatever as to localities, it would have been too laborious an undertaking to explore such an extent of country. It was agreed upon therefore to proceed for some distance along the edge of the steep bounding the table-land on the left, in the hopes of finding a road or path which might lead to a gateway, and perceiving in our course one or two paths, well worn by wild animals in their progress to water, we passed down one of these, and were fortunate enough, after turning and winding through the hollow ground formed by the steep we had just left, and an opposite spur of the elevated land, to discover that a high rampart of earth crossed the opening towards the plain; crowning this, we found ourselves amongst bricks scattered about, with a low wall running along the top of the outer edge, which on nearer inspection proved to be an upper parapet overtopping the rampart, the lower portion showing a solid facing of hewn sandstone blocks, of more or less height, according to the nature of the ground.

This rampart ran in a direction about North West, and in the distance of $\frac{1}{4}$ mile, which we inspected, the brick wall continued on the left, sometimes to the height of five feet, loop-holed in several places, apparently for arrows and spears, but more frequently in a very dilapidated state from huge trees having taken root in the rampart, and wild animals passing over it. At the distance of $\frac{1}{4}$ of a mile, a spur of the table-land touched upon the rampart and a brick wall crossed it, ascending the spur apparently to the level land above; here also must have been a gateway or passage of some kind through the cross wall, but all had

* Guroee Mountain, and also Geree, so called from a tribe of Mishmees inhabiting the lower spurs. The Thi Guroee is North of Suddyah, and in a direct line about 20 miles distant. The highest peak must be upwards of 8000 feet, being often covered with snow in the cold season, and behind it are seen several snow-capped mountains of a higher range. The Diggaroo and Dikrung rivers rise from the Southern slopes of this mountain, and the former brings down those beautiful boulders of primitive limestone-marble which supplies Western Assam with lime.

disappeared in the heaps of bricks lying about. The wall and rampart however still continued to the north-west, but having so little local information about the place, and being limited in our researches to that day only, it was considered advisable to return. We therefore confined our further observations to that portion of the works we had passed.

Conjectures as to the nature and extent of the works.—The table-land to the east being naturally strong from the steepness and difficulty of ascent, required no artificial defences, and from the circumstance of the rampart and wall abutting upon the southermost point of the table-land, it appeared to me evident that those works, to their utmost extent westward, probably to the Dibong, about 4 miles distant, were merely intended to enclose the table-land at the foot of the hills, and thus form a place of refuge in time of invasion. The quantity of fruit trees, such as Shaum (Artocarpus chaplasha,) Jack and Mangoe, would also lead us to suppose that the place had been peopled, or at least that it had been occasionally occupied as a summer residence. No buildings however are said to be on this hill fortification, but the Mishmees, who describe it as of great extent, speak also of a gateway by a hill stream, where there are large earthernware vessels similar to the *Naud*, used for holding water, besides other smaller vessels of various shapes; and the truth of the latter is confirmed by the numerous debris of earthern vessels found in the bed of the Dikrung river, of a description totally different from the manufactures of the present day in Assam, being more (as regards quality of material and shape) of that of the earthernware of Gangetic India.

Description and quality of works.—Although bearing the appearance of great age, for in many places the wall has bulged and fallen down, it has evidently been well and substantially built; the sandstone blocks, varying from 10 to 8 inches thick, 1 foot broad and 20 inches long, are rudely, but evenly chisselled with the point, and they are closely and regularly laid. The bricks are first rate, varying in size from 8 to 5, and 6 to 4 inches, and from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches thick, and the parapet wall formed of these, about 4 or $4\frac{1}{2}$ feet in thickness. The sandstone facing of the rampart may be somewhat less, but the whole masonry work is laid without cement or fastening of any kind; immediately over the sandstone, are two rows of bricks, and over these two others projecting, so as to form a rude cornice, which gives an appearance of neatness.

The rows or layers of masonry (sandstone) alternate from 5 to 7 and 9 from the bottom of the wall ontside, a difference which may be accounted for cither from the natural steepness of the ground in some parts, requiring less wall; or from the earth having accumnlated against the wall from natural canses, dnring a long period of time. Close to where the wall abnts against the table-land, there is a tnrn at right angles given evidently to form a flank defence. No writing or rnde marks on the stones such as I snbsequently found at other places, were discovered in this hill fortification.

The Tamaseree Mai, or Copper Temple.—This temple is designated by Bnchanan "the Eastern Kamykya," and its site is stated by him to be on the Dikkori Basini, near the north-eastern bonndary of the ancient kingdom of Kamarupa.

The small romantic little stream, on the right bank of which it is built, is not the Dikharoo river however, although in its course to the Burrumpooter it receives several accessories from that river. Dol, or Déwûl panee, is the name by which the temple stream is known to the Assamese.

Formerly, and whilst the remains of the Hindoo races on the north (right bank) of the Bnrrumpooter were still unmolested by the Ahom or Shan dynasty in Assam, the eastern Kamykhya was accessible from Western India, by that stupendons work the raised road or alley, which is known to have extended from the modern Kooch Behar to the Eastern confines of the Assam valley;—snbsequently also, as the Ahoms became proselytes to Hindooism, althongh their zealons policy excluded people from Western India, the natives of the valley had permission to propitiate, and I believe a road went direct through the present Suddyah to the Temple, or viâ Choonpoora or Sonipore of the maps, a place on the north bank of the Burrumpooter, the residence of the Suddyah Kwa Gohain, an officer of the above government, in charge of the eastern districts of Assam. Choonpoora is abont 10 miles east of the present station of Koondil Mookh, and the Temple may be abont 8 miles inland from Choonpoora, in a north-east direction.

A generation and more has passed away since the votaries of this Temple were numerous enough to keep the roads open, and the only accessible ronte now-a-days, is by the course of the Dálpanee, np which the anxious pilgrim frequently wanders for days without being able to find the object of his search, for the country is one mass of dense jungle,

and so many streams fall into that which passes the holy spot, that even those who have visited the place, and ought to have a knowledge of the landmarks, are frequently puzzled, that an idea prevails, that the goddess, or titular deity of the Temple, is to be found and propitiated only when it pleases herself. I believe indeed that in more than one instance, pilgrims have returned ungratified; and Byragees and others from Western India, in attempting to find the Temple alone, have perished from hunger, or become a prey to the tigers, which are numerous.

According to the accounts of my learned Hindoo friends, the worship at the eastern Kamykhya is the Yoni, but more properly the Linga of Siva, in conjunction with the Yoni. Siva has also been propitiated in his character of the destroyer, and it is well known that human sacrifices have been made there within the present century. I have not been able, however, to ascertain the date of the last sacrifice, and whether it existed up to the invasion of the Burmese, but I have been told as a positive fact, that the particular class of people from amongst whom the victims for such sacrifice were taken, are still in existence, and one family is now living in Suddyah. However, I have not made any particular inquiries regarding so barbarous a rite, and will merely observe that orthodox Hindoos do not admit the necessity for human sacrifice at the Eastern Kamykhya,* and account for its introduction, by the barbarity and ignorance of the people. My own opinion is also in favor of this, and the probability that it was so introduced by the Ahoms in their early ignorance of Hindooism, or that some wily and bigotted brahman, may have made it a price for the liberty of proselytism to his creed, the sects of which in Assam, the Ahoms, following their advent into the country, had long persecuted.

That Hindu Buddhism and Brahminical Hindooism both existed from a very remote period in Assam, I think we need not doubt, as well as, that the latter came down to a very late date; of which indeed, there can be no better proof than the fact of its influence having led to the conversion of the Bhuddistical Tai race who had become the rulers of the country.†

* Kamykhya should be more properly written Kam Ichchha, from *Kama* and *Ichchha*.

† According to Hiouan thsang, Buddhism had made no progress in Assam up to the middle of the seventh century. The Tibetan accounts which make Assam the scene of Sákya's death, are now well ascertained to be in this respect erroneous.—Eds.

Admitting also that the kingdom of Kamroop had attained to an equal degree of civilization with coeval Hindu dynasties of central India,* there is nevertheless but little doubt of its having fallen away into a state of anarchy and barbarism, for centuries perhaps, before the middle of the 15th, and this from the influx of impure tribes, on every side; and their mixing up with the original inhabitants of the plains.—The advent of these having followed upon the dying off of the former dynasties, or their downfal by invasion from Gangetic India, of which last there are two mentioned, that of the Emperor Vicramaditya and of Yitari† a pious Rajput, from Western India, who was the founder of a dynasty in central Assam, which became extinct with Rajah Sukrauk in 1478 A. D.

Indeed from whatever cause, its beauty, extraordinary fertility, and richness,—or perhaps the unwarlike character of its inhabitants,‡—it is certain we hear of Kamaroopa having been the prey of the invader from India, from the time of its being the abode of the primitive Assurs, and Deotás,§ to the last invasion of the Mahomedans of Bengal in the middle of the 17th century; I am inclined however to give its downfall from former greatness, a very early date, at least to a period prior to the first Mahomedan invasion of Kamroop, and would attribute it solely to the peculiar tenets of its people (the worship of Siva) and the prolonged struggles which in former times took place throughout India, between this and the opposite sect of Vaisnava; and here also we shall find the true cause of the unfinished and ruinous state of the extensive remains in central Assam, as also on its Eastern confines, and not ascribe the desecration, either to the rude hand of the Mahomedan, or the Shan invader.‖ About the middle of the 15th century, and perhaps

* The extensive ruins of Sonitpoor or Lohitpoor, as described by the late Capt. Westmacott, prove this I think, and in the praises of Chandragupta, as translated from inscription No. 2 of the Allahabad Pillar, and published in J. A. S. for June 1836, we have in stanza 19, "Of him who when his fame penetrated to the friendly forest of Pines, to Kamarupa, to Nepal," &c.

† Generally known as Dhuram-pal.

‡ In latter days at least.

§ In thus alluding to the Assurs and Deotas, I am of opinion that Assam or Kamaroopa was one of the earliest conquests of Indian Khetri kings, and the seat of that primitive Hindooism, (or shall we say Buddhism,) which existed previous to the Brahminical or priestly doctrine which superseded it.

‖ The first invasion of the Mahomedans is stated to have been in the parly part of the

before the death of Sukrauk, the last of the Yitari or Dhuram-pal line in A. D. 1478, a revival of Hindooism according to Brahminical tenets, appears (from Prinsep's Chronological Table of the North bank Burrumpooter dynasty) to have been carried out, by the introduction of Brahmins from Gour, and from this time, we may date a gradual extension of its influence over all classes, the Tai rulers of the country having become proselytes somewhere between 1611-49. After the death of Sukrauk without issue, the different classes of the people, appear by the same Chronological tables to have been formed into 12 Rajs, known in Assam as the Bárah Bhóóeeáh—these however, soon came under the dominant power of the Ahoms, who commencing with the Cassarees and Sooteeahs on the East, slowly but securely extended their supremacy by force and intermarriage, until they eventually assumed the sovereign power to the confines of Bengal.

Structure of Temple and style of architecture.—The Temple is situated close on the right bank of the romantic little stream, called the Dolpanee in the midst of a dense forest, in which there are some splendid specimens of the Nagasur. The dimensions of the interior is a square of 8 feet, the walls being about $4\frac{1}{2}$ feet thick, excepting in front, where there are two recesses on each side of the door, which is formed of three entire blocks of stone. The outer line of wall therefore encloses a square of about 17 feet. With the exception of the lintel and sides of the doorway, (Pl. XXX, fig. 1) the four walls are quite plain, both inside outside; from the basement outside however, at the height of 10 feet, there is a projection of stone slightly fluted on the underside, which forms a cornice, and above this there may have been about 2 feet more of wall upon which the roof rested, as not a vestage is remaining of this last, it would be difficult to speak confidently of its particular construction, but as there are several long pieces of stone, levelled at the lower end which have fallen inside, it is possible that these may have formed the groins of support to the roof—eight in number—the intermediate spaces between these, being filled in with thin slabs, of which there are many lying about, and the whole covered over with sheets of beaten copper, laced together through copper loops fastened on the

13th century, but it does not appear that they penetrated beyond Rungpoor, Bengal, which anciently belonged to the kingdom of Kamrupa.

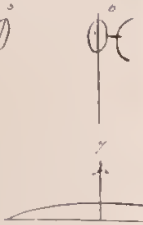
edges of the different sheets; as the groins however, are not above 5 or 6 feet long, the roof must have been rather flat; a carved vase-shaped block, now lying in the river, in all probability formed the centre of the dome. The Linga, two in number, are in the middle of a large stone inside, and accessible by a descent of a few steps from the doorway; in which there was a folding-door of stone or wood, judging from the hole at top and bottom on each side.

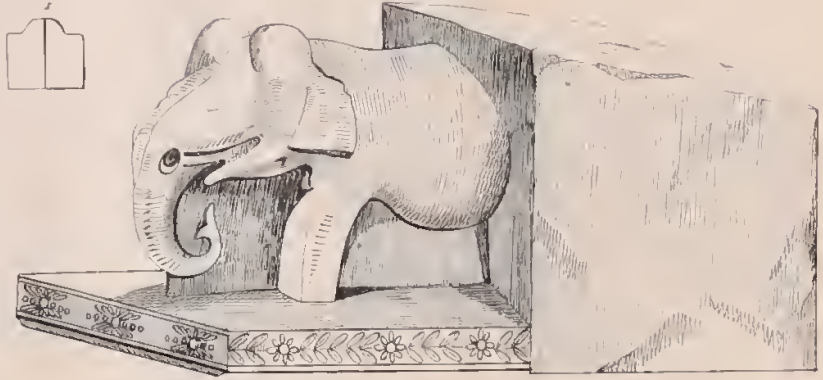
The style of architecture is ancient, but I should be inclined to think the present building of comparatively modern date, from the circumstance of finding a thin layer of brick *soorkee* or mortar between the rows of masonry; if such is the case, we might reasonably suppose it had been rebuilt about the time of the revival of Brahminical Hindooism, as before noticed. The original shape has without doubt been adhered to, and the same material employed as on its first construction. This looks old, and bears marks of iron fastenings now completely decayed.

Building material of Temple and enclosure.—The material of the temple, with the exception of the door lintel sides, and projecting wall on each side, is a course grit, well adapted for building purposes. The blocks averaging from one foot thick, the same in depth, and 18 inches long, are smoothly chiselled, and the masonry is evenly and closely fitted. The three blocks forming the doorway, each of $7\frac{1}{2}$ feet long and 2 feet by 18 inches in girth, with the blocks of the projecting wall, are reddish porphyritic granite of an adamantine hardness; and must have required exceedingly well tempered tools to work, the chiselling being with the point in straight lines, which give a ribbed appearance.

The site of the temple is as near as possible square with the cardinal points, the doorway to the west, the back wall having only a space of 12 paces between it and the wall of the outer enclosure, which on the east, rises directly up from the right bank of the stream. This is a substantial brick wall, about $4\frac{1}{2}$ feet thick rising to the height of 8 feet, on a foundation of rudely cut blocks of sandstone. The entrance of this enclosure is on the west face, where there has been a stone gateway and door, of which the lintel carved on the edge in a chain of lotus flowers, is lying close by, as well as some ornamented small pillars upon which in all probability the elephant* (Plate XXX. fig. 2.)

* The tusks of this elephant are said to have been of silver. The block from which it is cut measures 4 feet in length, 2 feet high, 18 inches broad.





was placed near the doorway; at the south-east corner, there was also a stone gateway leading to the small stream, in the bed of which are several carved and plain blocks of granite and sandstone to which it would be difficult now to assign a place; one of these is the triangular shaped weather-worn block of granite (Fig. 3, Pl. XXX.) on which are symbols, which perhaps may have some meaning, and give a clue to the era of the building;—one or two of the letter-like figures, assimilate with some of the characters of the ancient Nagree alphabet, but the shaded figures are too deeply cut to suppose they are more than symbolical of a particular era and people. On some of the blocks lying in the river, and in the foundation of the enclosure wall, as also on the elephant, I found the marks, represented at 1, 2, 3, 4, 5, of Pl. XXX, and which I fancy are typical of the sect of the mason, or of the builders. In front of the temple, and lying between a small brick terrace opposite the door, are several round-shaped plates of granite sunk to a level with the ground, upon which offerings are said to have been placed. The brick terrace has a low wall on three sides, now in ruins, but the outer enclosure wall is in a tolerable state of preservation, and along the inside of both eastern and western faces, brick tiles about 14 inches square are let in, having stamped upon them in high relief, figures of some of the Hindoo Avatars; the principal are the caparisoned horse—the same with warrior, in a high conical cap,—Hunooman,—the fabulous horse and tree,—two peacocks fighting,—one bird preying on another, with a variety of flowers of the Lotus, Champa, and Nagasur, done in different forms; most of the figures are dressed in the conical shaped cap; but I am inclined to think, this wall and its embellishments, are coeval with the second building of the temple about 400 years ago.

The present ruinous state can be easily accounted for by the jungle having grown up so thick around it and upon it; for it is quite impossible that such buildings could stand when once trees and shrubs had taken root on the walls, as one stone displaced, the roof would soon come down. The present state of dilapidation is however ascribed to an earthquake about 5 years ago, no doubt assisted by the numerous wild elephants who tear down the shrubs from the highest points they can reach, and rub themselves against the walls.

Altar of worship called Boora Booree.—Following my visit to the

Copper Temple, I was induced from the reports of Deoree Sooteeahs* of Suddyah to visit a temple or place of worship, situated close on the left bank of the Dikrung river, and to look for other remains which were said to exist in the Doab, or tract of country lying between that river and the Debong, connected, according to the traditions of the people, with the Rajah Bishmook before mentioned, and his capital of Koondilpoor.

We found this temple of worship about 10 miles distant from Suddyah, the last four miles of the road lying along the bed of the Dikrung to the mouth of a small stream on the left bank, called the Deopanee, in the immediate vicinity of which it is situated. This extraordinary looking place, represented in sketch No. 3, and rough ground plan annexed, is considered by the natives of the district, the most ancient and holy spot in Upper Assam; and the source from which all other objects of worship have sprung, not even excepting that of the Copper Temple. By the orthodox Hindoos, it would be considered an altar to Mahadeo, or Siva and Parvatti, with their attendant Gunas. From its shape and the number of the Linga however, I

* The Deoree Sooteeahs are the hereditary officiating priests of the copper temple, and Boora Booree. They belong to a class of the Assamese population deserving of notice, as the Sooteeahs or Chootyahs, who at one time previous to Ahom supremacy held power on the North and South bank of Burrumpooter, in the modern district of Suddyah and Saikwah, and according to their own account, are descendants of the original Hindoo Khetree races of ancient Kamarupa. (The family of the late Muttack Senaputtee are Chootyahs). This tradition might derive some corroboration from the fact, that the language of this race, now only known to the families of the priests, contains a great proportion of Sanscrit and Hindee as well as Burmese words, which last are probably derived from Pali, and the whole language may therefore have been originally one of the Pracrit dialects of the day; according to the Tai races also, the "Khwam Chootyah (or Chootyah,) language appears to have been the only written language in existence at the period of their advent in Assam;—and it is notorious, that both Burmese and Shans substitute the Y for the R, and we would then have it written more like Xshattrya or Chuttryah. In the present time the Sooteeahs are called Hindoo Sooteeahs, and Ahom Sooteeahs, the last named being those with whom the Ahoms or Saums intermarried at an early date. The class of the Assam population known as Beheeahs in upper Assam, also consider themselves belonging to the Hindoo Sooteeah family. With reference indeed, to the characteristic features of the different people in Upper Assam, it may be generally remarked I believe that amongst the Chootyahs—Beheeas and Kûlitás who have not intermarried with the Saums, the high and regular features of the Hindoo predominate. Many of the latter indeed are very well featured, with the grey eye which we frequently find amongst the Rajputs of Western India.

should be inclined to think that no better explanation of its original and pecular worship could be given, than what is written of the attributes of Adi Buddha, and Adi Prajna, in the quotations from original Sanscrit authorities on Buddhism, published in the Journal of the Asiatic Society for the month of Feb. 1836.

The altar is a hexagon, each face measuring about 8 feet inside. The architecture quite plain, the wall two feet thick, showing on the outside from the foundation 5 rows of sandstone blocks, varying from 10 to 8 inches thick, the masonry bound together with iron clamps. The inner side of the wall is brick, and on the top is a coping of brick soorkee without lime, which last looks like a comparatively modern addition The whole space inside has been paved with rough flags of sandstone; and in the centre, placed north and south, is a large slab shaped like a gravestone, containing the Linga, as represented in the rough ground plan.

In front of the altar on the West side, is a terrace or choubootra, upon which offerings are placed.* In later days, since the proselytism of the Ahoms, and the re-establishment of the worship at these temples, the Boora Booree had a light roof supported on posts, covering the whole space; this however is long since decayed and gone.

At a distance of 180 feet from the North-East corner of the altar is an outer rampart and deep ditch, corresponding exactly with the inner hexagon; and at a somewhat less distance is another, but lower rampart of the same shape. There is no gateway, or the remains of one, visible in these outer works; but a raised road leads out from the Western face of the altar; within the first enclosure, also in the North-West corner, is the remains of a small tank, and about 20 paces in front of the terrace is an upright stone (sandstone) with a moulding on the edge, placed there I was told for sharpening the dhas of sacrifice. The whole space is a dense jungle, and the site of the altar had to be cleared, before it could be examined; within the enclosed ground, as well as on the inner rampart, are some of the most magnificent Nahor trees I have ever seen. The surrounding jungle (underwood) is mostly the wild Betelnut (as it is called,) and the vicinity of the spot

* The most esteemed offering made at this temple is a white buffaloe, but pigeons, kids, and ducks are also sacrificed along with offerings made of money, cloth, opium, flowers, rice, and in fact every article of food.

is notorious for the number of the Sewah Palm (Caryota Ureus). Toon of a large description, and other timber trees, common to upper Assam, are also in abundance.

During a sojourn of a week on the banks of the Dikrung river, daily excursions were made into the jungle, in the hopes of finding the remains of another temple and tank, said to exist in, or near the site of an ancient place called Pritthimee, and by some Phoontook Nuggur ; situated between the Dibong and Dikrung rivers there, about five miles apart.

The result of our searches (although not fortunate enough to find the temple and tank we looked for) were three very fine pucka tanks, all of which were, in form, a parellelogram, three times the breadth in length, with two opposite bathing ghauts, exactly in the middle of the embankments, which last were built of first rate bricks, laid in three steps or ledges to the water's edge and without lime or soorkee, the upper surface of the embankment being also paved with bricks.

One of these tanks, situated several miles inland, was by rough measurement, 280 yards long, by 96 broad, and the site lengthways, north and south, as near as possible. The bathing ghauts, although ruinous, were built of hewn blocks of sandstone, flags of the same stone shield shaped, as at No. 8 of typical marks (Pl. XXX,) forming the side-ways. Here also, on detached blocks from these ghauts, I found inscribed the Fursah or Battle-axe, and other marks similar to those of the Copper Temple.

On the embankments near the ghauts, were several very large Banian trees ; and besides numbers of fine Nahor, we found the Neribi, (Canarium strictum), Tapor (Xanthochymus pictorius), and other fruit trees ;—the surrounding small jungle where the ground was high and dry, was invariably the wild Betelnut, with an occasional Sewah.

Another of these tanks is situated close on the right bank of the Dikrung, and from its immediate vicinity a high rampart of earth with a ditch, proceeds south-west and west, circling round for several miles north-west to north, at which point we found the remains of a brick gateway, with rampart, and the tank I measured, close to it ; a road also proceeds from this point to the westward (afterwards traced as far as the Dibong). In front of the gateway, is a small water-course, or continuation of the outer ditch, on each side of which were the remains of buttresses of hewn sandstone, and some large slabs were lying

about; it is evident therefore that a bridge crossed the ditch at that point.

None of the natives who accompanied us had seen these remains, and of course had no knowledge as to the extent of country enclosed by this rampart; but as it is some 18 feet high, with fine timber growing upon it, it is quite possible to trace it to the point where it again perhaps touches on the Dikrung. The tanks we found are all inside this rampart, and as others are reported to be in existence, we may conclude that it enclosed the site of a large town or inhabited tract of country. In fact, from the accounts of different people who prowl about these jungles elephant-shooting, and who describe various works of brick and stone,—high earthen mounds, with tracts of cultivatable land intermixed, I am inclined to think that the country from the Dibong to the Koondil river, a distance of 10 or 12 miles, with the hill fortification known as Bishmook Nugger, and Sisoopal Nugger,* belonged to one people and dynasty. It is indeed quite obvious that the masonry either of brick or stone, which we examined, is the work of the same people, and that the sandstone is the produce of one quarry, apparently of the old red sandstone formation, which we might expect to be in existence on the southern edge of the neighbouring mountains.

Our researches on the Dikrung ended with the discovery of the carved block of sandstone, represented in Pl. XXXI. This stone, $7\frac{1}{2}$ feet long by 18 inches broad, and 10 inches thick, was found inside a substantial brick enclosure 96 by 84 feet, built without lime or morter, but of the finest bricks I have ever seen; some of them in the doorway (situated in a buttress in the west face) 18 inches by 1 foot, and $3\frac{1}{2}$ inches thick, the wall $4\frac{1}{2}$ feet in thickness, and upwards of 6 feet high, the coping of entire bricks included.

In one corner of the enclosure was a well, made with the tile rings used in Bengal, and close to the eastern wall was a brick terrace, upon which the stone was placed parallel to this face. The inner side (which was uppermost), was divided by a ledge $1\frac{1}{2}$ inches high, into 3

* I am at a loss to know why this place, which was visited by Lieut. Rowlatt, is so called. Sispal, or Sisupal, who was Rajah of Chanderi in Bundlekund, may have accompanied his cousin Krishna in his wanderings; but he could have had no connection with the country of Bishmook beyond this, if we may except the story of his having been betrothed to Rúkhmíni, the daughter of Bishmook, and if we can believe that the Bedhurb of the Hindoos is the modern Suddyah, and the Koondilpoor of the Prem Sagur.

compartments, the centre containing 3, the others 2, in all 7 cavities, which led the natives of the present day to suppose the stone had been used as a *Dhenkiri*, for pounding rice.

There can be little doubt however of the object of the people who placed it in the position we found it; as well as, that its dimensions, and clearly sculptured face,* shows that at one time it formed the left hand side of the door of a temple, and taking into consideration that this building was at a considerable distance from the works enclosing the tanks, &c. we may reasonably imagiue that the stone with the whole of the brick work was taken from the site of the temple, we were iu search of, and to a certain extent corroborates the reports of the natives as to its existence within the site of Pritthimee Nugger, the discovery of which however, must depend upon further researches in that quarter.

In the present time it would appear difficult to account for the existence of such exteusive remains of population so far inland from the Burrumpooter. The traditious of the people however go to say, that the course of this river eastward of Suddyah even ran in former times much nearer to the northern mountains, but at what particular point the Burrumpooter subsequently receded from the hills, cannot now be well determined; as the land is high at Choonpoorah, and continues so, as far inland at least as the Copper Temple. It is evident notwithstanding, and it is the current belief of the people, that the extensive plain of Suddyah is an alluvial deposit of no very aucieut date. I have seen indeed, when the Burrumpooter was encroaching upon the station of Koondil Mookh, drift timber of immense size exposed by the abrasions of the river, and at the mouth of the Koondil, it appeared as if a forest had once existed, under the Suddyah alluvial deposit; which I believe, at the highest, is not more than 16 feet above the dry seasou level of the water in the river.

As the Suddyah laud falls again inland at about 4 or 5 miles distauce towards the Goormoorah Nuddee, it is possible that this last may in former times have been the bed of the Burrumpooter, which would thus have joiued the Debong, where the Dikrung and the united waters of the Goormoorah now fall into that river. This would bring the remains of Pritthimee and Bishmook within a reasonable distance of the great river of the valley.

* The figure on this stone is supposed to be that of Krishna; lying alongside of this was a smaller block, the edge carved in a chain frieze, apparently part of a cornice.

Description of the Tomb of an Ahom Noble, in a letter to Major S. F. Hannay; by Serjeant C. Clayton, *Depart. Public Works.—Communicated by* W. Seton Karr, *Esq. Under-Secretary to the Goment of Bengal.*

In compliance with the request contained in your note of the 19th instant, I beg herewith to enclose a rough Plan and Section* of the "Maidom" or Tomb, of which I superintended the opening at the request of Captain Brodie.

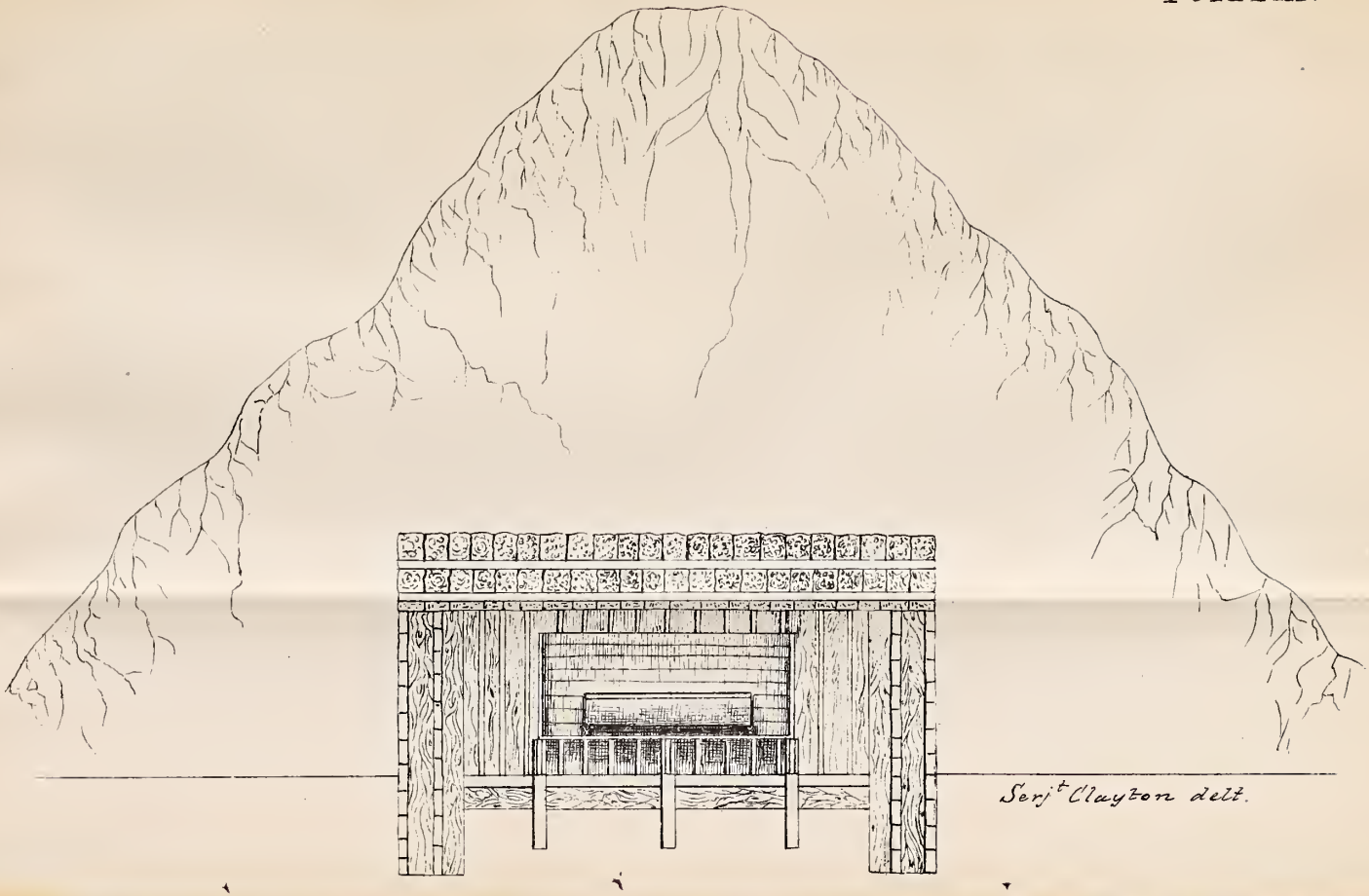
The Tomb is said to be that of the Burra Ghohain "Purnananda," who exercised great authority during the latter part, and after the reign of Gowrienath Singh; it was built entirely of massive timber of the dimensions shewn in the plan, the posts and beams being of Nahr and the plank of Oriam, all in excellent preservation.

The shell or coffin was placed upon a mechan, not in the centre of the room, but much nearer to the north side; and from the upper edges of the mechan rose a wall of thin rough boards enclosing the coffin on all four sides but open at top, which however rose to within a foot of the main roof. The coffin was placed east and west, but there was nothing in the shape to shew the head from the foot; it was something wider at top than bottom, and the lid (cut from a single plank) was slightly convex outside, and hollowed within; it rested on a groove cut round the edge of the coffin to receive it, without any other fastening. Under the coffin were four legs or stands, with a cross-bar connecting each pair; they were of very rough workmanship, similar to the commonest sort used under the cots of the natives. One peculiarity in this tomb from others that I have seen, was the total absence of iron work in the shape of nails, bolts, or other fastenings from every part of it. Within the coffin, not the slightest vestige remained of its former occupant, if I may except a quantity of ashy looking dust over a thin layer of sand;—the personal ornaments, such as rings, toothpick case, ear ornaments, &c. were all in one spot about the middle of the coffin, or as if placed under or near where the hand might have been, and not in their usual places about the person. Outside the coffin, on the platform of the mechan were placed the eating, drinking and cooking vessels, but the whole of those being of copper or brass were so much decayed as

* We have given the Section, which is sufficiently intelligible without the Plan, in Plate XXXII.—Eds.

to render it difficult to say what they had formerly been. The only other articles taken out of this tomb were two or three small iron hatchets of the common Assamese pattern, and as a guard was kept over the place from the time it was practicable until I searched every part of it, I am convinced that nothing was taken out clandestinely. The most valuable article found in the coffin was a small gold vessel for holding "chuna" or lime to be used with the beetle nut, and which I have been told was afterwards purchased by Mr. Bedford. The tooth-pick case was silver, and the gold ear-ornaments were deficient of the usual ornamental stones at the ends. This tomb was, I am afraid, of too recent a date to answer the purpose of comparison, for which you required the description. Robinson's "Assam" makes no mention of the particular time or circumstances of this Burra Gohain's death; but I have met with two or three elderly men who stated they could remember it, and I am inclined to think that it must have taken place so recently as 1810-11, during the reign of Chuudra Kanta Singh. The tradition regarding it is as follows:—Immediately after the accession of Chundra Kanta the Burra Ghohain received private intimation that the Rajah had joined in a plot against his life, and that the Bar Phukan was a principal leader in it, he therefore used every means to get the latter into his power, who however fled from Assam to Calcutta, and afterwards to the Burmese Court, from whence he returned to Assam with a powerful force, and on arriving within a few marches of Joorhath, he is said to have addressed two letters, one to the Rajah, stating amongst other matters, that he had already prepared instruments of torture for the purpose of putting to death his old enemy the Burra Gohain; and the second addressed to the Burra Gohain in terms of the greatest friendship for the purpose of getting him into his power;—the letters by some accident were exchanged, that to the Rajah falling into the hands of the Burra Gohain, who despairing of escape, suffocated himself by swallowing a large daimond. I trust you will excuse my troubling you with this digression, but I have thought that however exaggerated, there was probably some little truth in the leading points of the story; and if so, the position of the Burra Gohain at the time, together with the troubled state of the country, will account for the apparently rough way in which so great an officer was interred, and the trifling articles of value that were found with him.

Pl. XXXII.



Serj.t Clayton delt.

I have seen the interior of another old tomb after it had been plundered, in which was also a coffin, and the general plan of the place was precisely similar to the one I have described.

A third that I had an opportunity of seeing, differed so far as regards the substitution of a bedstead highly ornamented with carved wood work for the coffin; and from this grave a small portion of the bones of the head and other parts were taken out; a great number of jars (from 30 to 40 of different sizes,) of the common black earthenware of Bengal, and of the usual pattern, were found, and several neatly made small boxes, some of which appeared to have contained articles of clothing, others books or papers; one appeared to have held a quantity of redish coloring matter that might have been "Sindoor," and another had been filled with miniature tools and weapons, such as spear and arrowheads, hatchets, hammers and chisels; the usual eating and cooking vessels were found, and a block upon a stand that had been used for preserving the shape of the turban or head-dress. From all that I can learn amongst Coolies and others who have been employed in digging out those graves, it appears that (Rajahs excepted) any variation from the tomb I have attempted to describe, has been owing to the rank in life or means of the party, causing them to be larger or smaller, stronger or slighter, accordingly; but all on nearly the same principle, and the articles buried with them appear to have been invariably the personal ornaments, eating, drinking and cooking vessels of the deceased.

I have further taken the liberty of enclosing a sketch of what is traditionally said to be the ground-plan of the tomb of the older Ahom Rajahs previous to the reign of Chukunpha, alias Rudra Singh, A. D. 1695 or A. A. 1620. This Rajah is said to have prohibited the burying alive of his queens, guards, attendant slaves, elephant, &c. at his decease, and if this story has any foundation it would cause a material alteration in the size and arrangement of the tombs, as such a number of apartments would not then be required.

The rough plan of the Rajah's tomb I drew from information given me by an old Ahom villager who was pointed out to me as a man well acquainted with their old customs and traditions; he drew the plan with a stick on the ground, and named each apartment, and I must say that he, at least, appeared firmly to believe in the truth of what he was describing to me. Some part of his story has since been corroborated

by coolies who have been in those places, so far as separate apartments, remains of musical instruments, arms, &c. having been found in them, but from the way in which those tombs are opened, generally by a narrow shaft from the top, and the hurried way in which they have been explored, the foul air preventing them from being searched far from the opening of the shaft, it is very difficult to gain any correct information regarding the interior. In my rough sketch I have assumed the space occupied by the elephant to be 10′×5′, and for the horse 10′×3′, with a partition wall of 2 feet, which would give a square apartment of 10′×10′ inside, and allowing the outer rooms to have been all of one size, the partition walls 2 feet thick and the outer walls 3′, the outside dimensions of the whole building would be a square of 88 feet, and the size of the mound said to contain the tomb of Rajah Gadhadarra Sing at the Chereeai or Seereai Diew, is sufficient to cover a building of much larger dimensions; this however I need scarcely say is at present little better than supposition.

Some system of embalming is said to have been practised for the royal family; but if so, it must have been a very imperfect one, as I have ascertained that nothing more than scraps of bones have ever been found in any of the tombs, although I have met with several men who have asserted that the remains of more than one humau being have been found in them.

I trust that you will kindly excuse my having trespassed so very far on your patience with what I am aware must for the most part be already more correctly known to you; but I have been induced to do so in hope that some apparently trifling matter might serve as a clue or conuecting link to more important informatiou previously in your possession.

Verification of the Itinerary of HWAN THSANG *through Ariana and India, with reference to Major Anderson's hypothesis of its modern compilation. By Capt.* ALEX. CUNNINGHAM, *Bengal Engineers.*

The Itinerary of Hwán Thsáng* is the most valuable document that we possess for the history and geography of Ariana and India

* See Appendix to the FOE-KUE-KI.

prior to the Mahomedan conquests. The minute accuracy of its details and the faithful transcription of the native names of men and places, give it a vast superiority over all the Mussalmán works that I have seen, excepting only that of Abu Rihán. And yet this invaluable account has been impugned by Major Anderson of the Bengal Artillery, who states his conviction that in its present form the nomenclature of Hwán Thsáng cannot claim an antiquity of one hundred years: and he afterwards remarks that "the distances and directions are utterly worthless, being the combined results of misreadings, misunderstandings and guess-work." This is a sweeping condemnation of one of the most accurate of all ancient works, but I am happy to say that I can prove beyond all doubt that Hwán Thsáng is nearly always right in his "distances and directions," and that the Major is generally wrong in his conclusions.

In the first place, Major Anderson has used the wrong key, and he has consequently failed in unlocking the treasure of Hwán Thsáng's Itinerary. Having fallen upon the word CHI-NA-LO-CHE-FE-LO, which Hwán Thsáng says was the name given to the peaches introduced into the Panjáb from China, the Major's Persian reading immediately suggested that it was derived from the Persian term *shaftálú* (a peach), with the name of China prefixed to designate the country from whence the fruit had been imported. But a *partial* similarity of sound cannot be admitted as a proof of identity, when we have the direct testimony of Hwán Thsáng himself that the name bore a very different meaning. *Chini-shaftálu* means simply "China peaches," whereas the meaning of the original name was "son of the king of China." These translations, added to the transcriptions, enable us to identify the names in Hwán Thsáng's Itinerary beyond all possibility of doubt. Thus CHI-NA-LO-CHE-FE-TA-LO, is only a transcript in Chinese syllables of *China-raja-putra*, "sons of the China Raja." The Chinese alphabet possesses no R, and consequently this letter, as in the present instance, is always replaced by *L*. I have stated that *Chini-shaftálu* bears only a *partial* similarity to Hwán Thsáng's name: for it will be remarked that the third syllable of the original is altogether omitted in the Major's proposed reading; whereas my rendering of the term gives an equivalent for each syllable, and at the same time possesses the exact meaning attributed to the appellation by Hwán Thsáng.

Having thus started with the erroneous idea that all the names in Hwán Thsáng's itinerary could be identified by rendering them into Persian and Arabic characters, the Major proceeds to an examination of those mentioned in Northern India and Afghanistan: and believing in the fancied identification of KELU-SI-MIN-KIAN with *Kilah-semangán*, of THSE-KIA, with *Shikárpur*, of PO-FA-TO, with *Bhawálpur*, of U-TO-KIA-HAN-CHA with *Attok*, and of TU-MAN with *Hazrat-Imam*, he comes to the conclusion that the work of Hwán Thsáng is of an age posterior to the Moslem invasion of Afghanistan. I will now examine these identifications in detail; merely premising that, by the same style of reasoning, we may bring down the date of the composition of one part of the Bible to the reign of Queen Elizabeth, because Satan is therein named *Abaddon*, which in the English tongue is an appropriate name for the Devil.*

1st. KELU-SI-MIN-KIAN.—Hwán Thsáng particularly specifies that this place was to the *south* of FO-KIA-LANG, or *Baghalán*. Now Semengán was the ancient name of Heibuk, which lies to the North of West from Baghalán, instead of to the South. Of course Major Anderson will say that this is one of Hwán Thsáng's *misdirections*, but I will hereafter show from numerous instances that it is the Major himself who is wrong in his directions; he having been led astray by the ignis-fatuus of Arabic and Persian. Now his identification of KE-LU-SI-MIN-KIAN, with *Semengán*, rests only on similarity of sound, for he had not proved that Semengán was ever called *Kilah* Semengán, which is a very necessary desideratum before we can admit the identity of the

* In like manner we might bring down the date of Pomponius Mela to the period of British supremacy in India, as amongst the ugly Scythian tribes, he mentions the Riphaces (Wry-faces), a name which could only have been derived from us Britishers. An amusing squib might be written in this style against *all* the ancient geographers; more especially if it was combined with Mr. Vigne's ingenious system of etymologies. According to him, Hem-babs, the *Tibetan* name of Drás, is derived from *Hima* (snow, in *Sanskrit*), and *Bab* (a pass, in *Arabic.*) In humble imitation of this style I would suggest the possible derivation of the name of London, or Londinium, from *Lon* (salt in *Sanskrit*) and *Donna* (a lady, in *Spanish.*) From this natural combination, we find that London means "the place of the salt lady," in which we have perhaps an allusion to Lot's wife. Mr. Thornton in his Gazetteer innocently quotes several of Vigne's etymologies as if they were correct.

two places. So far from its being a fort, we know from Edrisi that it was only a good sized town with "mud walls" (murs en terre). It could not therefore have been called Kilah Semengán; and the consequent deduction that the Chinese syllables *Kelu* represent the Arabic word *Kilah* (fort) must be abandoned.

2nd. THSE-KIA. Major Anderson identifies this place with *Shikárpur*, but Hwán Thsáng's distances and directions give it a very different position. On the west was the river SIN-TU, the *Sindhu* or *Indus;* and on the east was the river *Pi-po-che*, the *Vipásа* or *Byás*. As there is no river to the eastward of the Indus at Shikárpur, the Major has prudently passed over the PI-PO-CHE in silence. But Hwán Thsáng adds another important particular regarding the position of THSE-KIA; namely, that at 14 or 15 li (about 2½ miles) to the South-West of it stood the ancient town of CHE KO-LO, with a *stupa* or tope which had been built by Asoka. This is no doubt the *Sákala* of the Mahabhárat, and the *Sangala* of Arrian and Q. Curtius. Its position to the Westward of the Byás agrees precisely with that assigned to the others; and the fact that Asoka built a Stupa there, proves that it was a place of consequence within 50 years of Alexander's death. And now for the first proof of the accuracy of Hwán Thsáng's distances and directions. Hwán Thsáng states that to the Eastward of THSE-KIA at 500 *li* (about 83 miles) stood the monastery of THA-MO-SU-FA-NA, (forêt obscure) and at 140, or 150 *li* (24 or 25 miles) to the North-Eastward from the monastery, was the town of CHE-LAN-THA-LO, or Jálandhara. The monastery must therefore have been near the present Dakhani Serai, on the Káli-Véhi river, and THSE-KIA, and CHE-KO-LO must have been in the neighborhood of Lahore and Amritsar. Now from Dakhani Serai and Sultánpur, the whole of the Western *Doab-i-Jálandhara-pita* is covered with a thick jungle, from which the monastery no doubt took its name of THA-MO-SEE-FA-NA, or "forêt obscure," from तमस् *tamas*, darkness, and वन, *vana*, a jangal. The actual position of CHE-KO-LO, *Ságala* or *Sangala*, I cannot at present determine, but we have no less than three distinct authorities, all of whom agree in placing it to the westward of the Byás, and on or near the high road leading across the Panjáb.

But the position of this place furnishes a second proof of the accura-

cy of Hwán Thsáng's distances and directions, and the consequent inaccuracy of the Major's identifications. The Chinese pilgrim states that to the South-Westward of KIA-SHE-MI-LO, or *Kashmir*, and across the mountains at 700 *li* (about 117 miles) was PAN-NU-CHA, which all the continental savans have identified with the Panjáb, in spite of the assigned distance and direction. Major Anderson does the same, and remarks that the mention made by Hwán Thsáng that PAN-NU-CHA, was a dependency of Kashmir would, if the time could be ascertained, give a clue to the period when the work was composed. But PAN-NU-CHA is certainly *Panuch* or *Punach*, the *Púnch* of the maps, which was always a dependency of Kashmir during the Hindu rule. Hwán Thsáng's distance and direction are therefore again correct. Hwán Thsáng further states that to the South-Eastward of PAN-NU-CHA, at 400 *li* (about 66 miles) was KO-LO-CHE-PU-LO, and at 700 *li* (about 117 miles) more to the South-Eastward, was THSE-KIA; or in other words, that THSE-KIA was situated about 183 miles to the south-eastward of *Punach*. This brings us again to the neighborhood of Lahore and Amritsar, the very position already obtained by working Westward from Jálandhara. As *Amritsar* was originally called *Chek*, it seems probable that the holy city of the Sikhs, stands in the actual position of the *Sákala* of the Mahabharata, and the *Sangala* of Arrian.

These detailed distances and directions, from two such well ascertained places as Kashmir and Jálandhara, fully establish the accuracy of Hwán Thsáng's Itinerary in this part, and the incorrectness of Major Anderson's identification of THSE-KIA with *Shikárpur*; more particularly as Shikárpur is to the *west* of India, and not to the *north*, as THSE-KIA is stated to be by Hwán Thsáng.

3rd. PO-FA-TO. This is placed by Hwán Thsáng at 700 *li* (about 117 miles) to the North-Eastward of MEII-LO-SAN-PU-LO, or *Mallisthánpura*, the present Multán. Major Anderson identifies PO-FA-TO with *Bahâwalpúr* to the *South*-Eastward of Multán, a direction contrary to that indicated by Hwán Thsáng. As the town possessed no less than 4 topes built by Asoka, its antiquity may be placed as high as the period of Alexander. Now the distance and direction bring us to the banks of the Ravee, and to the neighborhood of *Harapa*, an ancient city now in ruins, which both from tradition and position, must have been one of the large fortified towns taken by Alexander. The Major

has been particularly unfortunate in his selection of Bahâwalpur as the representative of Po-fa-to, as that place was founded by Baháwal Khan within the last century. *Chicha-watni* may perhaps be the actual position of Po-fa-to, as the second and third syllables are identical.

4th. U-to-kia-han-cha. The position of this place can be determined very nearly by Hwán Thsáng's distances and directions. From Shang-mu-kia-phu-sa, which appears to have been a holy spot in or near the city of Pu-se-ko-lo-fa-ti (*Pushkalávati* or *Peukelaotis*, the modern *Hashtnagar*) to the South-East was the town of Pa-lu-sha; to the north-east of which at 50 *li* (upwards of 8 miles) stood the temple of Pi-ma, the wife of Iswara (*Bhimá*, one of the many names of Durga). To the south-east of this temple at 150 *li* (25 miles) was the town of U-to-kia-han-cha. From these data I have ascertained by measurements on Walker's and Mirza Mogal Beg's maps that the temple of Bhimá must have stood close to the present town of Noshehra, and that U-to-kia-han-cha must have been at or near the modern Niláb. Major Anderson identifies the latter with Attok, and points to the identification of Pho-lo-tu-lo with the ruins of *Pertór*, as a simple proof of his correctness. But the ruins of Bithor lie to the *South* of Attok, while Pho-lo-thu-lo was 20 *li* (or $6\frac{1}{3}$ miles) to the *North-West* of U-to-kia-han-cha, which I identify with Niláb, between which place and Attok the hills are covered with the ruins of Bithor and Messa Kot. Major Anderson is wrong in disputing Hwán Thsáng's measurement of the Indus at this place. For the accurate pilgrim does not say that the river was *one mile* wide; but that it was from 3 to 4 *li* (as nearly as possible half a mile) in width; which it actually is in many places in this neighbourhood. The Major may therefore keep his note of admiration for the breadths of rivers recorded by Arrian. The very fact that the *li* of Hwán Thsáng differs so much from the *li* of the present day proves the antiquity of the composition of his work: for there are about 6 of his *li* to the British mile, whilst of the modern *li* there are only 3 to the British mile. This is not a mere assertion, but a point which I have ascertained by Hwán Thsáng's recorded distances between Kashmir and Jálandhar, before alluded to; and by the recorded distances in the Kabul valley, which I will now mention.

Beyond FAN-YAN-NA, or BAMIAN to the Eastward, and across the snowy mountains, or *Koh-i-Baba*, lies the town of KIA-PI-SHE, which is undoubtedly the *Kapisa* of Ptolemy and the *Capissa* of Pliny. Major Anderson identifies KIA-PI SHE with Kabul; and thinks that "SI-PI-TO-FA-LA-SSE may be *Estalif*." But Estalif lies to the North of Kabul, whereas SI-PI-TO-FA-LA-SSE was to the South of KIA-PI-SHE. The Major is therefore as unfortunate in his conjectures as in his more elaborate deductions. SI-PI-TO-FA-LA-SSE is an exact transcript syllable for syllable, of the Sanskrit *Sweta-Versha*. Now Ptolemy mentions both *Kapisa* and *Kabura*, and places the former to the Northward of the latter, and in the neighbourhood of *Barborana* or *Parwan*, of *Parsiana* or *Panjshir*, and of *Niphanda* (read *Ophiana)* or *Hupián*. It is highly probable therefore that we may identify it with the present *Kushán*, more particularly as Solinus calls the place *Caphusa;* for the name of Kushan, كوشان, is often written كفسان, Kafshan, in the same way that we have both Afghan and Aoghan.

This point being established I will now proceed to examine Hwáu Thsáng's "distances and directions." From Kiapishe to the eastward at 600 *li* was LAN-PHO, or *Lamghán* (*Lambatæ* of Ptolemy.) Thence to the South-East at 100 *li* and across a *large river* was NA-KO-LO-HO, or *Nangrihár*. Major Anderson calls this district *Nang-nehar*, which is only another erroneous fruit of his Persian predilections, that name being the Persian corruption of *Nangrihar*, as the word is spelt in Pushtu works, and which is faithfully preserved in the Chinese transcript. Professor Lassen has identified it with the *Nagara* or *Dionysopolis* of Ptolemy, which was no doubt the same as the *Begrám* near Jalalabad, around which several topes still exist as witnesses of Hwán Thsáng's accuracy. Ptolemy's name of *Dionysopolis* was still in use so late as A. D. 1000, for *Dinuz* or *Dinus*, is mentioned by Abu Rihan as lying nearly midway between Kabul and Peshawur. Now, from KIA-PI-SHE to NA-KO-LO-HO being 700 *li* or 233 miles by Major Anderson's estimate of the *li*, it follows that if he is correct in his identification of the former with Kabul, the latter must be situated to the eastward of Peshawur; but as he identifies NA-KO-LO-HO with *Nangrihar*, it is clear that his estimate of the *li* must be wrong. According to my estimate of 6 *li* to the British mile the distance will be 117 miles; which is only a few miles more than the distance measured upon Walk-

er's large map. Again, from NA-KO-LO-HO to KIAN-TO-LO, or *Gandhára*, and its capital, PU-LU-SHA-PU-LO, the distance is said to be 500 *li*, which according to Major Anderson's estimate, would place the latter somewhere to the eastward of the Jehlam. By my estimate the distance is upwards of 83 miles, which is somewhat short of the distance measured by the perambulator. But the total distance by my estimate is exactly 200 British miles, which agrees nearly with the measured distance of Alexander's surveyors between *Alexandria Opiane* (Hupian) and *Peukelaotis* (Hashtnagar) which was 227 Roman miles, or 207¼ British miles. From these statements it is clear that it is not Hwán Thsáng's distances that are wrong, but Major Anderson's estimate of those distances.

5th. IU-MAN. This Major Anderson identifies with *Hazrat Imam ;*—but Hwán Thsáng's statements point to a different place :—for *Hazrat Imám* lies to the south of the Oxus, whilst all the places to the East and West of JUMAN lie to the north of the Oxus. Besides which the itinerary of the Southern bank from AN-THA-LO-FO or *Anderáb* to SHE-KHI-NI, or *Shakhnan*, is detailed in another place. According to Hwán Thsáng IU-MAN was situated between TAN-MI, or *Termed*, to the North of the Oxus, and KO-TU-LO, or *Khatlán*, a district likewise to the North of the river. Now in this very position we have the *Shumán* and *Nomán* of Ibn Haukal, the *Sumán* of Edrisi and the *Shumán* of Abulfeda. But the itinerary of Edrisi agrees exactly with that of Hwán Thsáng. To the eastward of TAN-NI, or *Termed*, was CHI-AO-YAN-NA or *Chaganian ;* to the east of which again was HU-LU-MO, the *Hamúrán* of Idrisi, situated at 30 miles from Chaganian. Then to the east of HU-LU-MO was IU-MAN, the *Sumán* of Edrisi, 39 miles from Hamurán. Beyond IU-MAN was KIU-HO-YAN-NA, the *Andián* of Edrisi, and the *Alubán* of Ibn Haukal. Then to the eastward was HU-SHA, the *Waksh* or *Washgerd* of the two Musalmán geographers ; beyond which again was KO-TU-LO, or Khutlán, a district on the northern bank of the Oxus. This well known place the Major identifies with *Kator* to the south of the Hindu Kush. From these distinct details it is certain that IU-MAN cannot be identified with Hazrat Imám.

I have now examined one by one the chief positions on which Major Anderson relied for the proofs of the correctness of his system of iden-

tification. As not one of them has stood the test of a rigid examination I consider it clear that the Major's system must be wrong: in further proof of which I will examine a few more of his geographical identifications before proceeding to the historical part of the enquiry.

P. 1189, "KIU-MI-THO."—"Kunduz I suspect." Hwán Thsáng has just before been detailing the itinerary of the *northern* bank of the Oxus from Termed *eastwards:* and beyond KO-TU-LO or *Khutlán*, (mentioned above) he placed the mountains of TSUNG-LING and KU-MI-THO, which must therefore be to the eastward of *Khutlán* near the source of the Oxus; in which position we find the *Komedœ Montes* of Ptolemy answering to the TSUNG-LING, and the *Vallis Komedorum* answering to the district of KIU-MI-THO, Hwán Thsáng is therefore right again.

P. 1189.—"CHI-KHI-NI, Cherkes-Cireassia," *Circassia!* To justify this seven-leagued saltation the Major states that he has no doubt "a leaf has here taken its wrong place." I feel bold enough to express my opinion that the leaf is certainly in its right place, and that CHI-KHI-NI is as certainly in the very position indicated by Hwán Thsáng. The origin of many of the Major's most erroneous conclusions may be noticed in his attempted identifications of this word, in which he evidently reads the French *ch* as an English hard *ch*, instead of as the English *sh*. After correcting this curious "misreading" we have, according to Hwán Thsáng, the river FA-TSU or Oxus to the south-west of KIU-MI-THO, and the mountains of *Tsung Ling;* and to the south of the Oxus, we have SHI-KHI-NI or *Shakhnán*, the *Lakinah* of Ibn Haukal, and the *Sakiná* of Edrisi: the district on the Shakh-Dara, one of the head waters of the Oxus.

To the south of SHI-KHI-NI, on crossing the Oxus, we come to THA-MO-SI-THIEI-TI, or HU-MI, of which the inhabitants had green eyes. This district Major Anderson identifies with *Daghestan* on the *Caspian:* but from the position assigned to it by Hwán Thsáng there can be no doubt that it is the present *Wákhán*. The dimensions given to it agree very well with those of the narrow valley of the upper Oxus. HU-MI was from 1500 to 1600 *li* (250 to 266 miles) from east to west; and only 4 or 5 *li* (rather more than half a mile) in width, from north to south. Now from the Sir-i-kol lake to the junction of the *Shakh-dara,* the Oxus is 170 miles in length, measured direct by a pair

of compasses on Wood's map, to which must be added one half more for the windings of the stream, making a total length of 255 miles. From Ish-kashn to Kundut the valley of Wakhan, according to Wood, is from "a few hundred yards to a mile in width."—The average width is therefore somewhat more than half a mile, as accurately stated by Hwáng Thsang. This is one more proof that the distances and directions of the Chinese pilgrim are correct.

But there is another interesting point mentioned by Hwán Thsáng connected with this identification of Hu-mi with *Wákhán* that in my opinion adds the last link to the chain of evidence in favor of the correctness of my identification. Hwáng Thsáng says that Hu-mi was one of the ancient districts of the Tu-ho-lo, or *Tochari*. Now one of the five tribes of the Tochari was named Hieu-mi, and their chief town was called Ho-mi. From them I believe that the Oxus received its name of *Amú*. This was no insignificant *clan*, but a mighty *tribe*, whose king, *Kadphises Hoëmo* (OOHMO), judging from the numbers of his coins still existing, must have ruled over Kabul, and the Panjab for a long time.

The mention of green eyes points to a mountainous country, and not to the low banks of the Caspian. For it is a well known fact that in lofty mountain-valleys the inhabitants generally have blue or grey eyes, often inclining to green, as is likewise the case with the same colored eyes in Europe.

P. 1197.—"Ou-la-chi may be *Uch*." This is another instance of the French *ch* being misread as the hard English *ch*. U-la-shi is no doubt the *Urasa* district of the Kashmirian history, the *Urasa regio* of Ptolemy, and the *Rash* of the present day, for the district of *Rash* lies just to the westward of Mozafarabad, and to the north-east of Kashmir; agreeing with the direction indicated by Hwán Thsáng.

P. 1199.—"Che-to-thou-lo,—Khoozdar." This is a third instance of the misreading of the French *ch*, and distances and directions are again mistaken. According to Hwán Thsáng to the north-east of Che-lan-tha-lo, or *Jálandhara*, and across precipitous mountains at 700 *li* (about 117 miles) was Khiu-lu-to, the boundary of India on the north. Both distance and direction point to the district of *Kulu*, which as Hwán Thsáng correctly states, is "surrounded by mountains, and close to the snowy mountains." Major Anderson iden-

tifies KHIU-LU-TO with *Kelát-i-Ghilzi* Now from KHIU-LU-TO to the south, at 800 *li* (about 133 miles) across high mountains and a large river, was SHE-TO-THU-LO, bounded to the west by a great river. This name, SHE-TO-THU-LO is an exact transcript of the Sanskrit *Satadru*, the *Zadadrus* of Ptolemy, and the *Hesudrus* of Pliny, now called *Satrudr* or *Satlaj*. The other large river crossed on the road from *Kulu* is of course the *Vipása* or *Byás*.

These two identifications of KHIU-LU-TO and SHE-TO-THU-LO with *Kulu* and *Satadru*, are I think, conclusive of Hwán Thsáng's accuracy both in distances and directions, and of the erroneousness of the Major's system of identification founded upon Persian readings and etymologies. My identifications prove that Hwán Thsáng derived his names from Sanskrit originals; witness the rivers PI-PO-CHE, or *Vipása*, SHE-TO-THU-LO, or *Satadru*, SU-PHO-FA-SU-TO, or *Subhavastu*, with the towns PU-SE-KO-LA-FA-TI, or *Pushkalávati*, SATHANI-SHE-FA-LO, or *Sthaneswára*, and numerous others, all of which show that Hwán Thsáng could not have copied his names from the misspelt spoken names of Mahomedan authors. As Major Anderson has stated his conviction that Hwán Thsáng has derived his information from "Arabic and Persian geographical publications," it behoves him to point out the Musalmán geographer from whom the Chinese author has copied. If such a work really exists it will be invaluable. I will now proceed to an examination of some historical points mentioned by Hwáng Thsáng for the establishment of the perfect correctness of the date (600 to 650 A. D.) claimed for him by Chinese authors.

1st. In his mention of the kingdom of SIN-TU or Sindh, Hwán Thsáng states that the king was of the race of CHOU-TO-LO (or in English characters, SHU-TO-LO) an exact transcript of the Sanskrit *Sudra*, one of the four well known castes of Hindus. Major Anderson, using the same mispronunciation of the French *ch* for a fourth time, identifies the CHOU-TO-LO with "*Chator*, a celebrated tribe of Rajputs." *Chitor* or *Chitráwara*, is the name of a celebrated fortress, as its meaning implies, and not that of a tribe. The Rajputs of Chitor are now called *Sisodia*, but in Hwán Thsáng's time they were known under the names of *Gráhilót*.

Now the period at which *Sudras* reigned over Sindh must be the date of Hwán Thsáng's visit. In the *Chach-Námeh*, or Persian history of

Sind, we find that Mohammed bin Kásim conquered that country from Raja Dâhir in the year A. D. 711. As Dâhir reigned 33 years, and his father Chach reigned 40 years, we obtain A. D. 638 as the date of Chach's accession. Now as Chach and Dâhir were Brahmans, and their successors were Mahomedans it is clear that the Sudras must have reigned prior to A. D. 638; which agrees precisely with the period assigned to Hwán Thsáng's travels from A. D. 629 to 646. I cannot positively assert that Chach's predecessor was a *Sudra;* but it is certain that he was not a *Brahman,* for the Rana of Chitor addressing Chach says "you are a *Brahman;* the affairs of Government cannot be carried on by you;" thereby intimating that his predecessor was not a Brahman.

2nd. At 1000 *li* (about 166 miles) to the north-east of U CHE-YAN-NA or *Ujain* was the kingdom of CHI-CHI-TO of which the ruler was a Brahman. Now from Abu Rihán's description of *Jajáwati* (read *Chachávati*) of which the capital city was named *Kajurâhah,* there can be no doubt that the place indicated was the principality afterwards held by the Chandél Rajputs, *Kajurâha* still exists; and from the inscriptions yet extent, as well as from the genealogy preserved by the bard *Chand* in his *Chand Rás,* we know that the Chandel Rajputs held this district from about A. D. 700 down to the period of the Mahomedan conquests. The time at which a Brahman reigned there, and consequent by the date of Hwáng Thsáng's visit must therefore be anterior to the accession of the Chandel Rajputs, or prior to A. D. 700 which agrees with the time assigned to Hwán Thsáng's travels.

3rd. In his mention of MA-KIEI-THO or *Magadha,* Hwáng Thsáng gives the name of five kings who reigned there previous to his visit. Their names are,

SO-KIA-LO-A-YI-TO.	or	*Sankaraditya.*
FO-THO-KIU-TO.		*Budhagupta.*
THA-KA-TA-KIU-TO.		*Takatagupta.*
PHO-LO-A-YE-TO.		*Baladitya.*
FA-CHE-LO.		*Vajra.*

Of the second, fourth, and fifth of those Princes there are coins still existing to testify to the truth of the pilgrims narration. But we have yet more explicit evidence of his accuracy in the date of *Budha-gupta's* inscription on the Eran Pillar. This date is 165 of the Gupta era

which as we learn from Abu Rihán commenced in A. D. 319. The date on the pillar is therefore equivalent to A. D. 484. Supposing that *Budha-gupta* reigned until A. D. 500, and that the three following princes occupied the throne during the 6th century we have the date of A. D. 600 as the earliest limit of the period of Hwán Thsáng's visit.

4th. The king of PHO-LI-YE-THA-LO was of the race of FEI-SHE or *Vaisya*. PHO-LI-YE-THA-LO is a literal transcript of the Sanskrit *Vrihadhara*, the "much-containing," a synonyme of Indra, and the recorded bearing and distance of 83 miles to the westward of MO-THU-LO or *Mathura* point to *Indra-prastha* or Delhi, as the place visited by Hwán Thsáng. Now we know from Abul Fazl's lists that prior to the conquest of Shaháb-ad-din in A. D. 1188, the throne had been occupied for 83 years by 7 *Chohán* kings, who reigned 83 years and before them by 20 *Tuar* kings who reigned 437 years. From these data, we have A. D. 1188—83—437—668 A. D. the latest date at which a *Vaisya* prince could have reigned at Delhi.

I have now shown from four independent historical statements made by Hwán Thsáng that the period of his visit from A. D. 600 to 668 corresponds precisely with the date assigned by the Chinese authorities, namely the first half of the 7th century. This date is moreover fully corroborated by other internal evidence of which the principal points are; 1st, the total silence of the pilgrim regarding the Arabs and their conquests; 2nd, the mention that the king of FOE-LI-SHI-SA-TANG-NA or *Parashasthan*, (the present *Panjhir* or *Panjshir*) was of the race of *Thu-kiueï* or *Turk*; therefore prior to A. D. 900, the period of the usurpation of the Brahman *Kallar*, whose descendants reigned over the Kabul valley until Mahmud Ghaznavi's conquests. This is distinctly proved by Abu Rihán. 3rd, That all the districts along the Oxus were in the possession of the TU-HO-LO or *Tochari*: therefore prior to the Arab conquests in the beginning of the 8th century.

In conclusion I would ask Major Anderson to state in what Mahomedan author Hwán Thsáng could have found the *Sanskrit* names of kings and countries already noticed. I will answer the question myself. "In none:" for, to quote the words of Ibn Haukal regarding *Hind*, (India) as the greater portion of the country belonged to Kafirs and Idolaters, "a minute description of it would be unnecessary and unprofitable."

Correspondence regarding the Coal Beds in the Namsang Nago Hills. Communicated by Capt. T. E. ROGERS, *Superintendent of Marine.*

No. 191 of 1848.

To Capt. T. E. ROGERS, I. N. *Superintendent of Marine, Fort William.*

Dated Gowahatty the 13th April, 1848.

SIR,—I have the honor to submit a letter No. 175 of the 9th ultimo from Mr. J. Thornton, sub-assistant, accompanied by a map prepared by that gentleman reporting his visit to the coal beds on the banks of the Dikoo, which were discovered, and partially worked at the expense of Government by the late Mr. Sanders.

2. In laying this report before you I have no other immediate object than to place at your disposal all the information we may obtain from time to time relative to the coal formations of this province, should the Government at any time be induced to work any of the beds on their own account.

3. The quality of this coal you will find by reference to the proceedings of the coal committee has already been favorably noticed, and I believe it is in all respects equal to the Jeypoor coal, and much more favorably situated for being worked and transported downwards whilst there is reason to suppose it exists in much more extensive beds than at Jaipore.

4. It might be desirable that this and other similar reports should be published for general information, and perhaps the Asiatic Society would give them publicity as information connected with economic museum of Geology forming by that Society.

I have, &c.

(Signed) F. JENKINS,
Agent Governor General.

No. 175.

To Major F. JENKINS, *Governor General's Agent N. E. F. Gowahatty.*

Seeb-Saugor, 9th March, 1848.

SIR,—I have the honor to state that I have returned from an inspection of the coal beds in the Namsang Nago hills, having proceeded

thither with a view of reporting on the practicability of supplying coal from thence for the use of the Government Steamers coming monthly to Assam.

2. I am having a survey made of the road or path from Nazeerah to the coal beds from which a map will be drawn up and furnished to you, I trust in a fortnight. I beg to note in the margin, the distances in detail from Nazeerah to the coal beds; the first distance is along a broad road which has been long neglected but by repairs may be made a very good road. The second distance is a foot-path over low hills and may be made a tolerably good road at a moderate expense. The last portion of $2\frac{3}{4}$ miles is the most difficult part of the whole, being over a hill about 1800 feet high with two or three steep ascents. A coolie cannot take more than two light loads from the coal beds to the coal depôt in the course of a day.

From Nazeerah to the foot of the hill, ...	$10\frac{1}{4}$ miles.
From thence to coal depôt on the Dikhoo river, ...	$3\frac{1}{2}$ do.
From thence to coal beds,.....	$23\frac{1}{4}$ do.
From Nazeerah to coal beds,.....	$16\frac{1}{2}$ do.

3. Respecting the transport of the coal by water, I beg to state that the difficulty lies only near and under the hills where the rapids are numerous. But as boats of the largest size during the rainy reason can proceed up the Dikhoo to the first rapid and as canoes of 15 or 20 maunds in the dry season, and of 100 maunds in the rainy season, can be taken over the rapids to the coal depôt, I see nothing to prevent the conveyance of coal by water to Gowahatty. I came down in a canoe of 20 maunds over most of the rapids without any danger or difficulty. I did not see all the rapids, but those that I came over appeared to consist entirely of loose stone of various sizes; by removing which, or turning them into weirs, the navigation of the river would be considerably improved.

4. The bed of the coal that is now being worked by the Contractor's men, crops out on the brow of a hill about 1400 feet high, and is situated on the right side of the Namseesoo valley, down which flows a mountain torrent called the Namseesoo Nuddee. It is considerably elevated above the bed of the torrent. The thickness of the coal-bed strata is about 10 feet, of which the pure coal bed is from 3 to 4 feet. The remainder, consisting of black powder and soil interspersed with lumps of iron pyrites —the dip of the bed is about 36° and the direction 40 S. W. and N. E.

MAP of the ROAD
from Nazeerah to the Coal Beds
in the
NAMSANG NAGAH HILLS
Scale, ... 1 Mile to ½ Inch

From pieces of coal and traces observed of excavation made by Mr. Sanders in 1842, I am of opinion that there are other beds of coal at various depths under the one at present exposed to view, which is at the point of now being worked, about 10 feet below the surface of the soil. With a dip of 36° it must increase in depth rapidly, but this renders it not improbable that coal may be found at a lower elevation in some other part of the valley.

5. The present Contractor, Muneeram Dewan, has never visited the coal beds, and has shown their capacity by returning 200 rupees of the advance he received. The difficulty of supplying coal from the Namsang hills is great, but not in my opinion insurmountable. A respectable man, Roodram Hensoa Boowah, proceeded with me to the coal beds, and after due examination he is willing to contract for the supply of coal at Gowahatty at the rate of 8 annas per maund. I would therefore beg the favor of your permitting an advance to be made to him of Co.'s Rs. 250 on proper security, and sanctioning an outlay of Co.'s Rs. 250 for the clearance of the road from the foot of the hills to the coal beds, a distance of $6\frac{1}{4}$ miles. I am in hopes that by opening the road and making a proper search in the several mountain streams of the low hills, other beds of coal may be discovered more accessible than those at present under notice.

6. I have not fowarded any specimen of the coal because the present contractor has furnished several maunds of it to the Steam Agent at Gowahatty. Besides this, the Coal Committee know the quality of the coal from Mr. Sanders' reports and specimens. Mr. Mornay, Superintendent of Assam Company, accompanied me to the coal beds. He has been employed for some time at the Bengal Collieries and his opinion is that the Namsang coal is far superior to any obtained from the Damoodah and Adji coal mines.

I have, &c.

(Signed) JOHN THORNTON,

Sub-Assistant Commissioner in charge.

Seeb-Saugor Commissioner's Office,
the 9th March, 1848.

Sanskrit Inscription from Behar, with a translation by Dr. BALLANTYNE *and remarks by Capt.* M. KITTOE.

विहारसे दक्षिनपूरव पांच कोस पर सुकामगुसरानांमे एक बौद्धके पुराने मन्दिरपर यह खुदा हुया था।

१ श्रीमानसौ जयति सत्वहितप्रवृत्तसन्मानसाधिगततत्वनमोमुनीन्द्रः॥
क्लेशात्मनांदुरितनक्तदुरासदान्तः संसारसागरसमुत्तरणैकसेतुः ॥

२ अस्यास्मदुरवोवभूवुरबलास्समूयहर्त्तुम्मनः का लज्जा यदि केवलो न वलवानस्मित्रिलोकप्रभौः ॥

३ इत्यालोचयतेवमानसभुवायो दूरतो वर्ज्जितश्रीमान्विश्वमशेष-मेतदबतादोधौ सवज्रासनः ॥

४ अस्युत्तरापथविभूषणभूतभूमिर्देशोत्तमोनगरहारइतिप्रतीतः ॥

५ तत्रद्विजातिरुदितोदितवङ्ग जन्मानाम्नेन्दुगुप्तइति राजसखोवभूव ॥
रज्योकयाद्विजवरस्सगुणो गृहिण्यायुक्तोरराजकलयामलयाजयेन्दुः
लोकःपतिव्रतकयापरिभावनासुसंकीर्त्तनं प्रथममेव करोति यस्याः॥

६ ताभ्यामजायतसुतः सुतरां विवेकी योवाल एव कलितः परलोक-बुद्धा ॥

७ सर्वोपभोगसुभगेपिगृहे विरक्तः प्रव्रज्ययासुगतशासनमभ्यपेतुम ॥
वेदानधीत्य सकलान् ह्यतशास्त्रचित्तः श्रीमत्कनिष्कमुपगम्यमहा-विहारां ॥

८ आचार्य्यवर्यमथसुप्रशमप्रशस्यम् सर्वज्ञशान्तिमनुगम्यतपश्चचार ॥

९ सोयंविशुद्धगुणसम्भृतभूरिकीर्त्तेःशिष्योऽनुरूपगुणशीलयशोऽभिरामः
वालेन्दुवत्कलिकलङ्कविमुक्तकान्तिर्वन्द्यःसदामुनिजनैरपि वीरदेवः॥

१० वज्रासनम्बन्दितुमेकदाधश्रीमन्महाबोधिमुपागतोऽसौ इक्ष्वन्ततोऽ-

११ गात्सहदेशिभिक्षून् श्रीमद्यशोवर्म्मपुरंविहारं। तिष्ठन्तथेहस्तुचिरं
प्रतिपत्तिसारः श्रीदेवपालभुवनाधिपलब्धपूजः ॥
प्राप्तप्रभःप्रतिदिनोदयपूरिताशःपूषेवदारिततमप्रसरोरराज ॥
१२ भिक्षोरात्मसमः सुहृद्भुजइव श्रीसत्यबोधेर्निजो नालन्दापरिपाल
नायनियतस्सक्षास्थितेर्यास्थितः ॥
१३ येनैतौस्फुटमिन्द्रशैलमुकुट श्रीचैत्यचूडामणी श्रामण्यव्रतसम्वृतेन-
जगतश्श्रेयोऽर्त्थमुत्थापितौ ॥
१४ नालंदयाचपरिपालितयेइसत्याश्रीमद्विहारपरिहारविभूषिताङ्ग्या
उद्भासितोऽपिबहुकीर्त्ति वधूपतित्वेयस्साधुसाधुरिति साधुजनौ
प्रशस्तः ॥
१५ चिन्ताज्वरंशमयतार्तजनस्य दृष्ट्याधन्वन्तरेरपिहियेनहतःप्रभावः ॥
१६ यश्चेप्सितार्थपरिपूर्णमनोरथेनलोकेनकल्पतरुतुल्यतयागृहीतः ॥
१७ ते नैतदत्रकृतमात्ममनोबहुच्चैर्वज्रासनस्यभवनम्भुवनोतमस्य ॥
संजायतेयदभिवीक्ष्यविमानगानाकैलाशमन्दरमहीधरशृङ्गशङ्का ॥
१८ सर्वस्योपनयेनसत्व सुहृदामौदापमभ्यस्यता सम्बोधौविहितस्पृहं
सहगुणैर्विस्फार्ह यीर्य्यन्तथा अत्रस्थेन निजेनिजाविहवृहत्पुण्या-
धिकारेस्थितेयेन स्वेनयशोध्वजेन घटितौवङ्गावुदीचीपथे ॥
१९ सोपानमार्गमिवमुक्तिपुरस्यकीर्त्तिमेताम्बिधायकुशलंयदुपात्तमस्मात्
२० कृत्वादितःसपितरं गुरुवर्गमस्य सम्बोधिमेतुजनराशिरशेषएव ॥
२१ यावत्कूर्म्मोजलधिवलयाम्भूतधात्रीविभर्त्तिध्वान्तध्वंसी तपति तपनो-
२२ यावदेवोग्ररश्मिःस्निग्धालोकांशिशिर महसायामवत्यश्चयावत्ताव-
त्कीर्त्तिर्जयतुभुवनेवीरदेवस्य शुभ्रा ॥

Translation.

"Glory to that holy Munindra who has obtained an acquaintance with the truth by directing his excellent understanding to the welfare of all

beings, the sole bridge by which the soul-wearied can cross this world-ocean, the midway of which is hard to pass in consequence of those sharks, our sins! May that holy one protect this whole world, he who is firmly seated in wisdom, he who was left unassailed by the God of desire, for *Kámadeva's* reflection was this:—'If I am powerless against this Lord of the three worlds, when all my agents united,—(women, odours, the spring time, moonlight, and all other things that incite to love) have failed to attract his thonghts, why need I be ashamed?'

"There is in the northern quarter, placed in the loveliest of lands, the best of places, named *Nagarahára*. There, there was a twice-born man named *Indragupta*, a friend of the king, who had been born in the country called Bengal. That worthiest of the twice-born was inseparably united with his wife *Rajjoka*, as the moon is with its lustrous digits; and when people spoke of the histories of devoted wives, the first name mentioned was always hers,. To those two there was born a son, most sagacious, who, even whilst he was reckoned a child, in consequence of his desire to know of the other world, abandoned his comfortable home, where every luxnry was at his command, in order ascetically to follow the instrnctions of Bnddha.

"Having perused all the *Vedas* and having pondered the *Sástras*, he went to the holy convent called *Kanishka*, where the best of teachers were to be found, and which was famous for the quietism of its frequenters. There he devoted himself to asceticism.

"This student became adorned by qualities, practices, and fame like those of his teacher, renowned for purest virtues. *Viradeva* was his name. The sages honored him, for he was pure from stain as the new moon.

"Once he went to visit the greatest of the *Buddhas Vajrásana* (the occupant of the adamantine throne); then he went to the city of Behar, the city of king *Yasovarmmá*, to visit the holy mendicants and their disciples. He, the quintessence of truth, having staid long there, received the respectful attentions of the Lord of the land, *Srí Devapála*. Resplendent he shone, daily fulfilling the hopes of men, as the sun, filling the four quarters of the heavens, dispels the darkness.

"He was the friend of the pious mendicant *Satyabodhi*, intent on keeping the road to salvation; he was as close a friend to him as his own soul, as his own arm. Practising all the duties of asceticism, he raised,

for the world's benefit, these two gems of tumuli evidently as beautiful as the peak of mount *Indrasaila*. He was lauded by the good with reiterated applauses, as the Lord of fame, though his chief glory was his keeping the true word of salvation; a path whose glory consists in the abandonment of all worldly pomp and pleasure. By him was the splendour of even *Dhanwantari* (the physician of the Gods) eclipsed, for he soothed by a glance the thought-fever of afflicted mortals. The world, all whose wants and wishes he supplied, took him for the (all-bestowing) *Kalpa* tree. By him was erected this temple of *Vajrásana*, the best in the world, lofty as his own soul, the sight of which put the Gods in doubt whether it were mount *Kailása;* they beheld by him the every way bountiful, the friend of all that exists, the practiser of asceticism, whose practice thereof was combined with a thirst for knowledge and a perseverance as imitable as his other virtues.

"By him, occupied in his high and holy duties, were built two vaulted edifices in the northern regions, as the pennants of his fame. Having made this fame a staircase (or Jacob's ladder) to the city of salvation, it was his desire that the whole multitude of his ancestors —his father taking the lead—should thus attain the fruits of saving knowledge.

"So long as the tortoise shall support the earth ocean-garlanded, so long as the bright-beamed sun shall shine, dispelling darkness, so long as night shall seem pleasant with the cool moon-beam, so long may the fame of *Váradeva* shine lustrous on the earth!"

Remarks.

This curious, and I think valuable inscription, I discovered partly by chance, for though I had made every enquiry I learnt nothing till I was about leaving the village of Pesserawa, for my onward march, when some children gave information of its having been found in the mound from whence the people were then digging bricks, and which has been the site of a large Bauddha temple of the Tantra period, which the numerous idols, mutilated and entire, clearly show; there have been more than one temple on this spot, for the mound is extensive. The inscription points to this being the case; there is no tradition beyond a couplet concerning Durga or Devi, to whom there is a small temple of modern date a little to the west of the mound; but saving the idol of Durga slaying Mahishásura, the rest are all purely Buddhist collected

from the mound. There is one of Ilá giving birth to Sákya; the child is jumping from her side whilst she holds the branch of a tree; heavenly musicians are playing and her attendants are with her. I tried to obtain this, but they would not sell it, though they readily sold the inscription; however, afterwards, some ignorant Brahmans upbraided the zemindar for so doing. I removed the slab to Behar, where I took perfect fac-similes in triplicate, and returned it to the village, where I had it fixed in a niche in the outer wall of the modern temple above described, having first engraved in English on the margin the date of its being recovered and set up by me for preservation on account of Government. I hoped to inspire confidence by this means and thereby induce people to disclose any other such mounds, of which I have no doubt there must be many where these great ruins exist; Bargáon, Lettarawa, Yogespúr, &c. &c. &c. It is very difficult to gain any information in Zillah Behar, the people are bearish and ill-disposed in the extreme. I have here traced part of the first line of the inscription to give an idea of the style of writing,* which is a good specimen of an early type of Mithilá Nagrí, that in which most of the inscriptions on the Idols are written, more or less modified; the letter M, म, is written म, which is but a slight remove from म of the Gupta writings. I attach much weight to these apparently trifling variations, as I feel convinced that they aid materially in deciding the date of sculptures and writings. In the present case for instance, I am inclined to think that Devapála, whose name occurs in Abul Fazl's list, in the copper plate from Monghyr and that from Dinájpúr, as an early sovereign of the Pála dynasty of Goura or Bengal (vide Prinsep's Useful Tables, p. 117) must have reigned in the 9th century of our era the style of writing even in Náráyanpála's time being of a more modern stamp though early dates are found in inscriptions of a like type. The Dinájpúr plate gives 1027 S. as the date of Vigrahapála; Deopál or Devapala is 8th in succession before him; allowing 25 years as an average for each reign, we have 7 intervening, or $25 \times 7 = 175$—1027; leaving 852 Sumbut for the approximate period of Devapála's reign; consequently of our inscription, albeit Abul Fazl gives 1050 S. as the date, there are other reasons for supposing him to be in error, the inscriptions found by me

* We have thought it worth while lithographing a fac simile of this line in Plate XXXIV.—EDS.

at Gaya by the Sudra family date in the reigns of Nayapála and Vigrahapála the style of writing in them is far more refined, indeed it is the most elegant of any Indian writing. More than one of Náráyana-pálas reign are clearly of a later type than the one under review. The fine inscription at Uffsur is an intermediate type again between this and the Gupta of the coins and pillars. I shall be excused for this digression when it is considered how desirable it is to ascertain the date of an inscription bearing so much on several points of historical interest and particularly on the subject of Buddhism. We clearly see that it must have been revived after the persecution of Sankara Acharya and in a degenerate form; we learn that the author was a twice-born man (द्विजराज Dwijraj) par excellence a Brahman, though the term is applicable to other classes, he was learned in the Vedas and Sastras, showing that both were studied at the time by Buddhists, that the deities of the Hindus were acknowledged, for the last verse invoking the blessing of preservation says "as long as the earth shall remain firm on the back of Kurma the Tortoise," also the passage concerning the temptations of Káma Deva. We find mention made of the famous Vihára founded by Kanishka, who is no doubt the same who as king of Kashmir re-established Buddhism, it is not clear from the text whether Vira Deva the hero of the inscription studied under Kanishka, or merely at his Vihara; if the former it would show a moustrous anachrouism in the Raja Taringini or history of Cashmir, a point by no means to be wondered at. I would invite the particular attention of Sanscrit scholars to the passage in the text for the pundits first read it so. Dr. Ballantyne (Principal of Benares College) has kindly taken much pains to arrive at a correct meaning, for both my own pundit a young man educated in the Benares College, Hunumán Dyal, and Hiránand the talented teacher in the Sanscrit Pathsála, as well as others, have been at a loss on account of terms the meaning which they were unacquainted with. In the sentence श्रीमधसोवर्म्मपुरंविहारं, or rather Sri Madyaso Varmma puram Viharum." The one reads it "Dharma Puram," or "city of righteousness Behar." The other the "town of the great Yasovarmá," though the sense scarcely admits of this last reading, yet the letter is clearly च and not ध. The term Acharya Varya it is written आचाय instead of आचार्य्य वर्य. The term implying I believe "religious instructor" occurs in Fa Hian. The term "Nálandá," नालन्दा (नलन्दा) Hirán and says is to be found in the Vocabulary

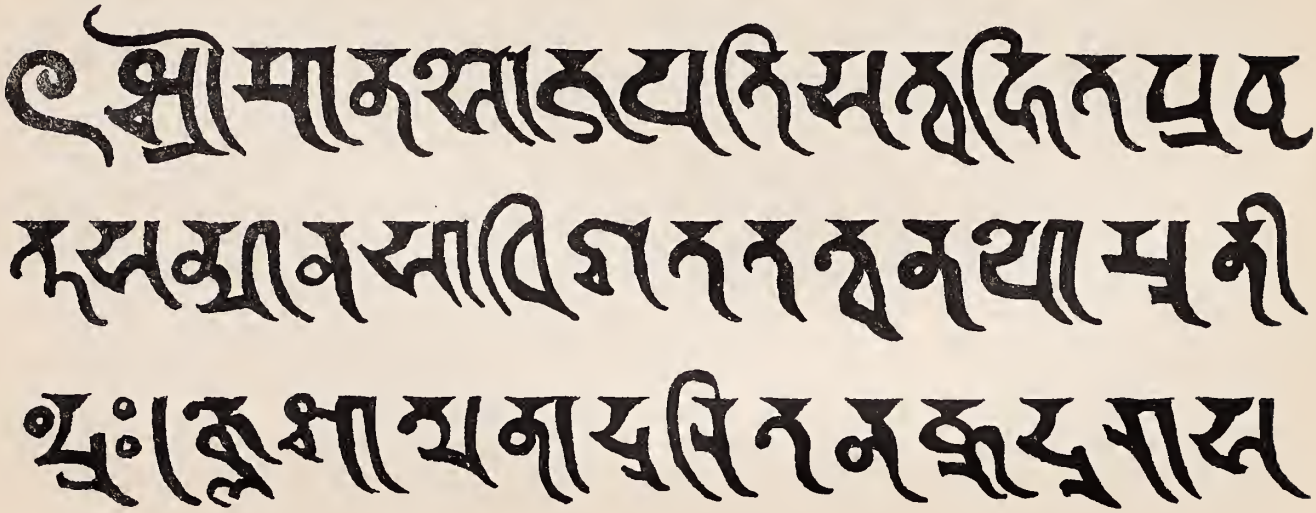
of Jain sentences, meaning the cross-legged position of absorptive contemplation of the Buddhas, the word could not be found in any dictionary. Be the date the 9th or the 10th century, we have here clear proof that the Buddhist faith flourished in India (all the land) at that period, that it did so even much later, is proved by the numerous short inscriptions on the images and Chaityas abounding in the district; and even at Sarnáth near Benares. I have on former occasions noticed the existence of the Linga amongst Buddhist fragments. The figure of Surya, and Mahesh and of Vishnu as Gadádhar, and Varáha are of equally common occurance; there are other idols of the Surrawuc Jains and of the Sheshanag type all jumbled together in this district, and particularly one of Siva with a Buddha on his forehead, also female figures with the same, and Buddhas with the trisúl, one figure at Bargaon represents a fury dancing on a prostrate Ganesha with an attendant holding a royal umbrella over her head: all belong to one period, ranging as I infer, from the 8th to the 10th century if not later; the later sculptures are the poorest in execution, and most extravagant in form. I have made a tolerable collection of drawings which are about to be submitted to Government officially as the result of my tour. This season they will no doubt be laid before the Society. I think that a grand collection should be made and published; but it is a work of labour and care. The collection I have made, and which will be sent to Calcutta, is very good and instructive.

My friend Mr. Laidlay considers that the Nagarahára mentioned in the inscription as the birth-place of Vira Datta is Jalálabâd or somewhere in its vicinity. I had imagined it to have been somewhere in the Gorackpur, district as the term northern country is used, but the pandits allow that Uttara Desa implies Cashmir and Cabul. Maha Bôdh is mentioned as a place to which the scetic proceeded. This is modern Bôdh Gaya still known by that name.

Note on the foregoing by J. W. Laidlay.

I suggested the identification alluded to by Capt. Kittoe, as well on the ground that there is no other celebrated Buddhist locality of the same name in northern India, as from the reference made in the inscription to the neighbouring convent or monastery of Kanishka. Of Nagarahára, what little we know is derived from the narratives of the Chinese travellers Fa hian and Hiouan thsang, by the former of whom

First line of the Gusserawa inscription from Capt. Kittoe's fac-simile.



J.W.L.

it is named *Na kie*, and by the latter *Na ko lo ho*. These are, as pointed out by Lassen, the Chinese transcripts of the Sanscrit word नगर, *nagara*, a town, which he further identifies with the Ναγαρα of Ptolemy.* It is curious, however, that the redundant syllable *ho* in Hiouan thsang's transcription has escaped the attention of both Lassen and Wilson, and is now explained for the first time by the reading of the name in Capt. Kittoe's inscription, नगरहार, *Nagarahára*. What the exact import of the suffix हार may be, I have not been able to ascertain. In Wilson's Dictionary it is stated to mean *taking, conveying;* also a *string of pearls*. In the latter sense it may possibly imply the 'precious or splendid city.'

At a period subsequent to the visit of these pilgrims, a nasal appears to have been introduced into the first syllable; for we find Ma-twan-lin, quoting another Chinese traveller, Kwang yuen, who visited India in 983, spells the name *Nang go lo ho lo;* the most exact transcription (omitting the nasal) which his language could supply of Nagarahára. Since then, the word has further degenerated into Nangrihar, or more corruptly, Nangnihar, which, according to Lieut. McGregor (J. A. S. vol. XI. p. 116), signifies in the dialect of the country, the *Nine Rivers*, and is applied to the entire valley of the Cabul river.

The convent or monastery of Kanishka, is no doubt that erected by him at Peshawur (Purushapura), the capital of Gandhara, and described by Fa hian and Hiouan thsang as the most magnificent in all Jambudwípa. Kanishka was the monarch under whose auspices, according to Tibetan authorities, the third revision of the Scriptures took place 400 (or, according to Mongolian Chronology, 300) years after the death of Sákya. It is greatly to be regretted that this important inscription is without a date; for it clearly indicates that at the time of its composition, Buddhism, or at least a Hindu-Buddhic syncretism, flourished and was taught in public institutions in the country immediately west of the Indus. At a much later period Marco Polo speaks of the existence of Buddhist monasteries in Cashmere; and even so late as the reign of Akbar, Abulfazl met with professors of that faith in the same country.

The hill designated Indrasaila in Capt. Kittoe's inscription, is that contiguous to the village of Giriyek near Behar, in the Chinese transcrip-

* Zur Geschichte, &c. p. 147.

tion of which *In tho shi lo gu ho,* (इन्द्रशिला गुहा, *Indrasailaguha,* or the 'rock cave of Indra') the original name may be easily recognised. It is the most easterly of the range of hills in which Rajagriha was situated, and was famous among Bhuddists as the spot where Sákya is fabled to have propounded the greater part of the *Prajná Paramitá.*

With regard to *Nálandá,* which appears to have puzzled the Pandits of Benares, it appears to me to be the name of the famous monastery near Rájagriha frequently mentioned in the *Dul-va ;* and on requesting Babu Rájendralal to ascertain if the passage would admit of this interpretation, he writes :—"I have very carefully examined the sloka you allude to, and think नालन्दा is the name of a place. The expressions, नालन्दापरिपालनाय, "for the preservation of Nálandá," and नालन्द्याचपरिपालित, "preserved by Nálandá," favour this supposition, and there is nothing against it. But as I have never met with this word in Sanskrita, and have not got a copy of Hemachandra's Dictionary of Bauddha terms at hand to refer to, I cannot be very positive. I may add, however, that Pundit Jayanarayana Vidyálankára of the Sanskrita College of Calcutta, is of the same opinion with myself, and believes Nálandá to be the name of a place."

Nálandá was a very famous place in its day, and the frequent scene of Sákya's disputations. It is the *Na lan tho* of the Chinese, the site of which, however, could hardly be identical with that of Gusserawa, where Capt. Kittoc discovered the inscription.

Before quitting this still unexhausted locality, I may take this occasion of mentioning another identification which cannot fail to interest such as are engaged in the investigation of Buddhist antiquities ; I mean that of the Sattapanni cave, the scene of the "first convocation on religion," an ample account of which may be found in Mr. Turnour's extracts from the Pali Buddhistical Annals (J. A. S. vol. VI, p. 510.) and in the third chapter of the Mahawanso. It is there narrated that the convocation in question was held in the 8th year of the reign of Ajátasatru, six months after the death of Buddha, in a magnificent hall in front of the Sattapanni cave, in the *Webharo* mountain,—one of the hills that surround the ancient city of Rajagriha. Fa hian in his account of that city mentions the scene of the first convocation, and the "*grot of Pin pho lo,*" or "*Pi pho lo,*" lying 300 paces to the west of the pass or valley that leads from the *old* to the *new* Rajagriha ; a site

easily recognised from the marked and unchanging features of the locality. None of the learned French commentators on Fa hian has attempted any restoration of *Pi pho lo ;* but in connection with the preceding tradition, it is obviously the Chinese transcript of the Pali *Webharo*, or of its Sanscrit equivalent. Now if we turn to Capt. Kittoe's interesting paper in the Journal for September 1847, we shall find in the Sketch Map at foot of Plate XLII., the Son Bundar cave set down in the *Baibhar* hill in the precise position indicated by Fa hian. The cave itself is thus described by Capt. Kittoe: "To the left or west side of the pass is a chamber called Sone Bundar, of precisely the same shape as those of Burabur. There are sockets to admit of timber roofing on the exterior of the cave, and *there have been buildings extending to some distance in front :* it would be interesting to clear the rubbish here. There are several short inscriptions, and some of the shell shape ; one has some resemblance to Chinese ; but the cave has been sadly used by a Zemindar, who tried to blow it up many years ago, hoping to find hidden treasure, and a large piece of rock has been broken away at the very spot where we should have expected to find an inscription." There is scarce room to doubt that this is the very site of the hall of the first convocation "at the entrance to the Sattapanni cave on the side of the *Webharo* mountain," and the precise spot where, as Fa hian assures us, "Foe, after meals habitually resorted to meditate;" and if subsequent investigation shall confirm this identification, it affords great encouragement to Capt. Kittoe to prosecute his labours in this interesting locality with renewed vigour. All the short inscriptions he mentions should be carefully copied. I fear, however, that the expense of digging and of clearing away the rubbish, without which no important result can be expected, will prove his greatest impediment.

Notices of some copies of the Arabic work entitled "Rasáyil Ikhwán al-ṣafá"—رسائل اخوان الصفا و خلان الوفا *By* Dr. A. Sprenger, *Communicated by* H. M. Elliott, *Esq. V. P.*

In the year 1812, the Rev. T. Thomason published a fragment of this work, which by the novelty of the ideas, the peculiarity of style, and even of the language, created considerable sensation. Baron Von

Hammer revieewed this publication in the Jahrbücher der Literatur, and shed some light on the origin of the book; and in 1837 Mr. Nauwerk published a monography on it.

A further notice of this curious production would be uncalled for had these scholars been in possession of a complete copy, or were there a complete copy to be found in Europe.

In the Tawárykh al-Hokamá of Shahrzúry we find the following passage on the origin of these memoirs :—

ابو سليمان محمد بن مشعر النسبي و يعرف بالمقدسي و ابو الحسن بن زهرون الربحاني و ابو احمد الذهرجوري و العوفي و زيد بن رفاعة فعلم حكماء اجتمعوا و صنفوا رسايل اخوان الصفاء و الفاظ هذه الكتاب للمقدسي

" Abú Solaymán Mah. b. Mosh'ir b. Nasby, who is known by the name of Moqaddisy, and Abú al-Hasan b. Zahrún Ryhány, and Abú Ahmad Nahrajúry, and al-'Aufy, and Zayd b. Rofá'ah are the philosophers who compiled the memoirs of the Ikhwán al-çafâ, which have been recorded by Moqaddisy." The date is not stated, but in the book from which this passage is derived mostly the chronological order is observed, and this note occurs immediately after the biography of Faryábу who died A. H. 319, we may therefore suppose that Moqaddisy flourished about the beginning of the fourth century of the Hijrah, M. Gayangos (Mohammadan dynasties in Spain I. p. 429) has shown that they were imported into Spain by Majaryty who died in A. H. 398. It is probable that Nahrajúry, one of the compilers, is identical with Abú Ya'qúb Ishaq b. Moh Nahrajúry, who is mentioned in Ooshayry's letter to the Gúfys,* and who died at Makkah in 330.

I have seen four copies of the Ikhwán al-çafâ in India: a complete copy is preserved in the Moty-mahal library of the king of Oudh; a splendid MSS. of the second half, beginning with page 336, and the 24th memoir, is in possession of the Asiatic Society of Bengal. It was written at Fayzábád in 1184, and contains marginal corrections by another hand; unfortunately there are several lacunas in it. A third and rather valuable copy containing chapters 1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 17, 15, 16, 30, 31, 33, 34, 35, 36, 37, 38, 39, 5, 6, 47, 48, 49, 50, 51, conclusion, 42, 43, 44, 40, 41, belongs to Mufty Sadr

* See also Jámy's Safahát, N. 149.

al-dyn of Delhi, and a fourth fragment, containing about one-eighth of the work, is in my possession.

The book is divided into four sections : the first treats on Mathematical Sciences, فنون رياضية ; the second on Natural Philosophy, فنون جسمانية طبيعية ; the third on Psychology and Speculative Sciences, فنون نفسانية عقلية, and the fourth on Religion and Metaphysics, فنون ناموسية آلهية.

Section 1.—Abstract Sciences.—Memoir on numbers ; the elements of arithmetic ; metaphysical theories (of Pythagoras, who is repeatedly quoted) on numbers. Four is considered the basis of the decimal system, for it is said, 1+2+3+4=10. The authors have a fancy for the number four, because there are four elements.

2. The Elements of Geometry. This chapter contains little more than the definitions of Euclid and the methods of calculating the area of a triangle.

3. Astronomy. This chapter gives a very clear view of the system of Ptolemy.

4. Music and the elements of versification.

5. On Geography.—Many authors dwell particularly on Mathematical Geograghy, which is treated very much in the same manner as by Abúlfedá, but it is considerably fuller. In the detailed description of the climates, the tables showing the longitude and latitude of places are unfortunately omitted in the code before me, but the space left blank to receive them is very small, and they cannot have been of much importance. The following is the description of the first climate : "This climate is 9000 miles, or 3000 farsangs long from east to west, and 445 miles, or 146 farsangs, from south to north. It begins at the equator, &c. &c. see Abúlf. p. 8. In this climate are chains of mountains which are from ten to one hundred, and even one thousand farsangs long ; there are no less than thirty large rivers, some of which are 20, others 100, and others 1000 farsangs long, and it contains about fifty large and celebrated cities. The most eastern country of this climate is the island of Niphon, النافون ; then comes southern China, then the south of Ceylon, then central India, then subcentral and Sind, then beyond the Persian Gulf the south of 'Omán, then comes the centre of the country of Shir, then central Yaman, then across the Red Sea, central Messynia ; then across the Nile is Nubia ; then the centre of the

country of the Barbar; then comes southern Bartáyitah, برطايتة, and finally the western ocean. Most of the inhabitants of this climate are black." Here follows a blanck of space of about three inches for the names of the principal cities. I believe this is the only Arabic author who mentions Niphon; the island of Waqwáq, which is far east of China, and which is frequently mentioned by Asiatic Geographers is probably the Fu-sang of Chinese writers, which has been lately identified with Mexico.

"*Second climate.*—It has about 17 great mountains and as many great rivers, and about fifty large and celebrated cities. Proceeding from the east, we come first to central China, then to the north of Ceylon, then to northern India, then to Kábul and Candahár, then to the north of Sind and to the south of Makrán, then we go across the Persian Gulf to central Arabia; across the Red Sea, we find Messynia, and the south of upper Egypt; on the other side of the Nile is Africa proviucia, then the north of the country of the Barbars, then the south of the country of Qayrowán, then central Bartaytah, and finally the western Ocean."

This will suffice as a specimen.

6. On ratios and proportious of quantities (in Arithmetic, Geometry, Music, &c.)

7. On creeds and professions. The definition of "art" is the same which has been given by modern authors on æsthetics الصنعة العملية هي اخراج الصانع العالم الصورالتي في فكره و وضعها في الهيولي "Art consists in giving body to an idea." The authors seem also to understand that labour is wealth; for they say that a piece of brass which is worth five dirhams will fetch one hundred if mauufactured into an astrolab.

8. On sciences. They are of three kinds of professional رياغية which give us certaiu abilities by which we may gain our livelihood, they are 1, Reading and writiug, كتابة والقراءة; 2, Grammar and linguistic, اللغة والنحو; 4, Arithmetic, الحساب; 5, Sorcery, alchemy, short hand, &c. السحر والكيميا والحيل; 6, Versification and poetry, العروض والشعر; 7, Commerce aud agriculture; 8, Trades and professions, حرف صنايع; 9, History and biography:—b., Religious Sciences the object of which is the salvation of our souls. They are: 1, the knowledge of the Qorân, علم التنزيل; 2, of its (mystical) commentaries, علم التاويل; 3, traditions, الروايات والاخبار; 4, the

knowledge of law and ordinances of God and of legal divisions, علم الفقه والسنن والاحكام ; 5, religious duties and ascetics, التذكير والمواعظ والزهد والتصوف ; 6, explation of dreams, تاويل المنامات ; c. Philosophical sciences, علوم فلسفية which are first the Mathematical Sciences, الرياضيات or Arithmetic ارثماطيقي Geometry هندسة Astronomy اسطرنوميا and music الموسيقا ; secoud, logic, المنتقيات in which are comprehended poetry, rhetoric ريطوريقا the topica and analytica توبيقا and sophistica سوفسطيقا and انولوطيقا ; third, Natural Philosophy العلوم الطبيعية which comprehends the following seven Sciences: the Sciences of the first principles of a body علم مبادي الجسمانية ; those are matter, shape, time, place, and notion ; 2, the Science of the heavens and of the universe علم السماء والعالم which teaches of what matter the stars and heavenly spheres are composed, how many there are, the cause of their motiou, whether they are subject to destruction in the same manner as sublunary bodies which are composed of the four elements ; 3, *de generatione et corruptione* علم الكون والفساد ; this Science treats on the nature of the four elements, on the influence of the stars, on sublunary bodies ; 4, meteorology علم حوادث الجو ; 5, mineralogy علم المعادن ; 6, botany علم النبات ; 7, zoology علم الحيوان which comprises anatomy and physiology.—d, metaphysical sciences علوم آلهية to which belongs, 1, theology ; (i. e. the Science of God) ; 2 the knowledge of spirits علم الروحانيات ; spirits are free from all matter, but act upon it, they are the angels of God, and the spiritual spheres which encompass the spheres of the heavens ; 3, the knowledge of the souls علم النفسانية souls نفوس وارواح dwell in the spheres of the heavens and in the elements from the ninth sphere to the centre of the earth. 4, The knowledge of government علم السياسة ; 5, the scieuce of things connected with a future state علم المعاد.

10. Memoirs. An abstract of Porphyry's Isagoge in which the "six words" ستة الفاظ are explained ; these are الجنس or genus ; 2, نوع species (ειδος) ; 3, الشخص individual (ατομος) ; 4, الخاص proprium (ιδιον) ; 5, العرض accidence (συμβεβηκυς) 6, القضل differentia (διαφορα).

11. An abstract of Aristotle's Categories, or on the "ten words" الالفاظ العشرة or المقولات العشرة they are الجوهر substantia (Ουσια) ; 2, الكم quantum ποσον ; 3, اكيف quale (ποιον) ; 4, المضاف relatum (προς τι) ; 5, الاين ubi (που) ; 6, المتي quando (ποτε) ; 7, النصة situm esse (κειθειν) ; 8, اللمكة habere (εχειν) ; 9, يعفل facire (σοιει) ; 10, ينفعل pati (νασχειν). The Categories are compared by the authors with the units.

12. An abstract of Aristotle's book "de interpretatione." This memoir contains also an essay on the utility of Logic.

13. Aristotle's Analytica Priora.

II *Section.*

1 (14.) An abstract of the Analytica Posteriora.

2 (15.) An abstract of the work de Cœlo. Besides discussing some of the questions propounded by Aristotle, our authors enter much into Astronomy, which like other subjects, is mystified by them. They assert that the ceremony of walking round the Kábah is expressive of Astronomical data.

3 (16.) De generatione et corruptione. This chapter like the preceding differs widely from Aristotle's work of the same name. It contains a popular explanation of Aristotle's ideas on the subject, interspersed with numerous moral reflections, and other extraneous matters.

4 (17.) On matter, space, motion, and time.

5 (18.) On minerals, their component parts, causes of the difference of their substance; how they are generated in the bowels of the earth; proofs that they are the first 6 productions of nature in the sublunary regions, or rather the souls of the world, or universal soul, and the lowest step of the ladder by which particular or differentiated souls ascend from the centre of the earth to the highest sphere of the heavens, where they enter into the society of angels (i. e. the highest spheres of the heavens), and into eternal bliss.

6 (19.) What nature (the soul of the world) is; how it acts on the four elements on their compound productions: animals, plants and minerals; moral application.

7 (20.) On the various kinds of plants. On their generation; causes of the differences of plants in shape, colour, taste, &c.; faculties of the souls of plants. How one class of minerals stands in connexion with plants, and one class of plants with animals, and one class of animals with man, and man with angels. God is the head of the chain of beings.

8 (21.) On the various kinds of animals; their structure and constitution. Classification of animals, on their habits; how they educate their young. Proofs that some animals are animated by angels who worship man (an allusion to the Qorán) who is the representative of

God on earth whilst other animals are animated by evil spirits. The specimen of the Ikhwán al-çafâ published by the Rev. T. Thomason forms part of this chapter.

9 (22.) On the Economy of the human body. Man is a microcosmos, and his body is like a well regulated city, the sovereign of which is the soul.

10 (23.) *De Sensu et Sensili.* Though this chapter bears the inscriptions of one of the works of Aristotle, it has little to do with the opinions of that philosopher. Impressions received by the senses are conveyed to the anterior portion of the brain where the faculty of imagination القوة المتخيلة resides; from these, they are communicated to the central portion of the brain which is occupied by the faculties of reflection القوة المتفكرة; then they are committed to memory القوة الحافظة, which has its seat in the posterior part of the brain, &c. (compare Avicenna, Lib. I. p. 35.) Astrological influences on the various parts of the body.

11 (24.) On fœtal life; the authors take an astrological view of the subject, naming the planets under the influence of which the fœtus is during every month of pregnancy.

Reports upon His Majesty the King of Oude's *Observatory at Lucknow. Communicated by* H. M. Elliot, *Esq. Sec. to the Government of India.*

To his Excellency Major General Sir. G. Pollock, G. C. B. *Envoy to the King of Oude, Dated Lucknow* 18*th January*, 1844.

Sir,—For the information of the Right Hon'ble the Governor General of India, I have the honor to submit my report on the affairs of his Majesty's Observatory during the past year.

Within this period, the Observatory has been rendered as complete in the Astronomical Department as I can expect to see it, by the acquisition of a very fine Equatorial which may be usefully employed on many extra-meridional observations for which an appropriate instrument has hitherto been wanting. It has a Telescope of 9 feet focal length; the polar axis is carried round by clock work, and the hour and declination circles are of 2 and 3 feet diameter. I have been under

the necessity of placing it on the pillar designed for an instrument of this description by my predecessor Captain Herbert, but whatever the advantages gained by an elevation of 35 feet above the ground in enabling the observer to command a more uninterrupted view, they are more than balanced by the disadvantage of the optical power of the Telescope being impaired by the vibrations to which so high a pillar of brick-work must always be liable; and I fear that this beautiful instrument cannot while so placed be applied to all the purposes for which its great power would otherwise fit it.

In the Magnetic Observatory the arrival of the vertical force and inclination instruments has enabled me since the month of April to make the daily routine of observations correspond with that of all the Magnetic Observatories established by Government.

With respect to the subjects on which the instruments are employed:— The observations of the planets are, at the suggestion of the Astronomer Royal, carried forward into the day as much as possible, the lesser planets are likewise at his suggestion carefully observed, and I believe that favored by our climate, we are more successful in frequently seeing them than they are in Europe. Besides the principal stars for latitude, &c., the Zodiacal stars, in number about 500, comprised in the catalogue of Caturegli, have been observed, as also those pointed out by Mr. Baily as requiring observation; and the re-observation has been commenced of the stars of the 3rd and 4th volumes of Mr. Taylor's Madras observations. We have in fact made more observations than we can easily reduce.

In the Magnetic and Meteorological Observatory, observations are made throughout the 24 hours, at each even hour of Gottingen mean time in accordance with the instructions of the Committee of the Royal Society. The term days have been kept and a few instances of magnetic disturbances have been observed in accordance with the same instructions, at every 5 minutes. The periodic experiments on intensity, I am sorry to say, have not yet been included for want of a duplicate instrument on the "Auxiliary" one especially adapted to the purpose, which has been ordered from England some time past, but has not yet arrived. I hope, however, partly to make up for the deficiency by means of a temporary instrument which I have had constructed at Lucknow.

Of the forward state of the reductions, I cannot speak as favorable as I could wish, but this has in a great measure arisen from my first Assistant having been compelled by ill-health to leave Lucknow at the same time that I was called away on Regimental duty, at the end of last year. It is likewise owing to my having undertaken the additional duties of the Magnetic Observatory with an establishment altogether unequal to them, when superadded to those of the Astronomical Department. The Assistant I have alluded to having been incapacitated by continued ill-health, I recommended the employment in his place of 3 educated native youths from the Allahabad school, and the calculations have since proceeded with greater rapidity, the reductions for 1841 having been completed and considerable progress having been made with those for 1842, whole copies of a large portion of the Magnetic and Meteorological Observations have been prepared for transmission to the Committee of the Royal Society. I must not omit to state that I have reason to be highly satisfied with the zeal and ability of my Native Assistants.

His Majesty's pleasure respecting the publishing of the observations has not yet been ascertained; indeed the meridian instruments not having been ready for use till August and September 1841, it seems scarcely expedient to propose publishing a separate Volume for that year. Should His Majesty object to the expense of printing in Calcutta, or (which would be better) in England, the results may be presented to the Astronomical Society for publication in their Memoirs. The observations in the Magnetic Department will all be forwarded to the Royal Society.

I have, &c.,

(Signed) R. Wilcox, *Major.*

Lucknow, 18th January, 1844.

To Captain J. D. Shakespear, *Offg. Resident at Lucknow.*

Dated Lucknow, 25th February, 1845.

Sir,—For the information of the Right Honorable the Governor General of India, I have the honor to present my report on the general state of his Majesty's Observatory for the past year. I fear that it will be found somewhat deficient in interest, but I have indeed, little

to mention beyond the facts that the instruments remain in excellent condition, and have been industriously, and as I believe, usefully employed.

The only alteration in the Meridional Instruments, which are in as excellent order as when they were first put up, is the introduction in the Mural Circle of a collimating eye-piece, the invention of Mr. Taylor of Madras, by the aid of which the image of the fixed horizontal wire in the eye end of the Telescope is seen reflected from the surface of Mercury and the zenith point is obtained at a much less expense of time, and I have reason to think with at least equal accuracy, as by the former method of observing the direct and reflected images of several stars. Its use for measuring the collimation error of the transit instrument would be equally advantageous were it not that the great height of the latter instrument above the floor makes its application inconvenient. I have before alluded to the tall pillar on which I was obliged to mount the Equatorial Telescope, and this beautiful instrument has been less frequently employed than under the more favorable circumstances of its pier being shorter and more stable, it might have been; but a good number of Eclipses of Jupiter's Satellites have been observed, and it is well suited for observing occultations of stars by the Moon, although from the pressure of business in the Magnetic Department, which has occupied a good deal of my own time, it has not been brought into use so frequently for this purpose during the last year as I hope it will be in future.

For the Magnetic Department we have received an instrument which was commissioned two years ago for experiments on absolute intensity, the measurement of which had hitherto been effected with the aid of a less perfect apparatus constructed by myself on the spot. An Induction Inclinometer has also been commissioned to supersede the Balance Magnetometer, which here, as elsewhere, has proved to be an instrument of inferior value; but its despatch from England has not yet been reported.

The Meteorogical Instruments are in good order, and Oster's self-registering Anemometer continues to act well, with the exception of a fault which I observe has been noticed in it at other places, that it is not delicate enough for recording the pressure of the light winds, which more generally prevail.

The course of observations remains unaltered. With the Meridional instruments, the moon has been observed at every practicable opportunity; the larger planets whenever they pass the Meridian between the hours of 5 A. M. and 11 P. M.; and care has been taken to carry forward the observations into the day so long as the planets can be seen and to commence again with them as soon after noon as they can be distinguished. The lesser planets at every opportunity; the stars of the Nautical Almanack have been observed, and a large number of small stars taken from the Catalogues of the Astronomical Society, and from those of Piazzi and Bode, ten observations being considered the least number to be made on each star before it is relinquished in favor of another.

The Magnetical and Meteorological observations have been continued on the plan recommended by the Committee of the Royal Society. The Declinometer, the Horizontal and Vertical force Magnetometers, the Barometer and the wet and dry Thermometers have been observed every two hours day and night, Sundays excepted—the dew point at every four hours throughout the season of the hot winds when ice was obtainable, and when a comparison of it with the results obtained from the wet bulb Thermometer is of most value: the great expenditure of Ether, at other seasons almost precluding its observation throughout the whole year. The Dip has been observed twice on each Tuesday and Friday. The self-registering Anemometer has been in constant use.

Absolute intensity observations have been made from the month of February, when the temporary instrument before mentioned was completed: and temperature experiments on the loss of Magnetic moment of the bars from accession of heat, were likewise then made.

I have made arrangements by which, without any increase of expense to the King, the principal Magnetic and Metcorological Instruments will be observed throughout the present year at every hour, instead of every two hours.

The reduction of our observations remains much more in arrear than I could wish, but compared with the same period last year we have gained very considerably; the whole of the magnetic and meteorological observations for 1842 and 1843, having within the last twelve months been transmitted to England, and a large portion of those of 1844 being in a state of considerable forwardness. When the arrears in this

department have been fairly cleared off, which in a few months more I hope to see effected, the aid of the assistants in the Astronomical Department will not be required to any extent, and as we have now an efficient establishment in both Departments, which was far from being the case when the onerous duties of the Magnetic Observatory were undertaken, I hope to report a rapid recovery of the arrear of our Astronomical reductions.

I have before reported that translations of Dr. Brinkley's Astronomy and of Vince's smaller work on the same subject made under my superintendence, were being printed at his Majesty's Lithographic press. Some little progress has been made with them during the past year; but there is so much employment of various kinds for the press that I fear it will be long before they are completed. A translation of Simm's Mathematical Instruments is being copied for the Delhi Translation Committee. The article on Magnetism from the Library of Useful Knowledge is also ready; and the King has ordered it to be printed. But seeing how long the works on Astronomy have occupied and are likely to occupy, I have not much hope of seeing a third treatise printed here.

I have, &c.

(Signed) R. WILCOX, *Major.*

Royal Observatory, Lucknow, the 25th February, 1845.

To T. R. DAVIDSON *Esq. Resident at Lucknow.*

Dated Lucknow the 9th July 1846.

SIR,—For the information of the Right Hon'ble the Governor General, I have the honor to present a report on His Majesty's Observatory.

As it might be interesting to His Lordship to have some account of the equipment of the Observatory, it may be proper to mention that our Transit Instrument and Mural Circle are upon the same scale as those at Greenwich, on the model of which they were indeed constructed by the same maker.

The Equatorial is likewise a fine instrument, having a telescope of 9 feet focal length, but its efficiency is a good deal impaired by its being

raised to a considerable height above the ground upon too slender a pier. The clocks are by Molyneux, one of the best of the present makers. The whole of these are in as fine order as when they were first placed upon their piers, with the exception of the Transit, the Micrometer of which being peculiarly exposed to injury, has suffered from an accidental blow during the past year, but fortunately the injury is of little detriment to the use of the instrument.

In the Magnetical department our instruments are similar to those with which the Observatories established by the British Government and by the Court of Directors were equipped, and our Meteorological instruments are also similar.

It is my endeavour to employ the Meridian instruments, firstly, on all those objects which cannot be so well observed in Europe, the larger planets therefore have hitherto been always observed when they have passed the Meridian between the hours of 5 in the morning and 11 at night, and will for the future be also observed at all hours whenever they are south of the equator ; great care is taken in observing the moon and moon culminating stars, and the smaller planets, which are not well seen in Europe, are observed at all hours ; we are also determining the places of a large number of the smaller stars by at least 10 observations on each. The methods of ascertaining the amount of the various corrections to be employed are nearly the same with those adopted at Greenwich.

In the magnetical and meteorological department since the commencement of 1845, in lieu of two hourly observations, we have taken them at each hour of the day and night of Gottiugen time.

The observations of this class, in the form of abstracts showing the hourly and daily mean readings for each instrument, have hitherto been forwarded to the Royal Society, with the expectation that they would be published in their transactions, either in the extended form in which they are forwarded, or after discussion by a Committee of that Society ; but the Board of Ordnance having ordered the observations taken by the officers employed under their direction to be printed at the expense of Government, and the Court of Directors having likewise undertaken to print those made at their own observatories, it may become necessary to ask the King of Oude to incur the expense of completing by publication the work which he has so liberally commenced.

No arrangement has yet been made for publishing our Astronomical observations, and it has always appeared to me that unless we had a printing press on the spot so that it might be done under my own inspection and revision, it would be difficult to get them printed in India, since it is not to be supposed that people capable of the task would be found attached to the printing establishments in Calcutta, while if there were, the expense would probably be greater than in England, where it could be done much better. The practice in the Royal Observatories of England and larger public ones, as Cambridge and Edinburgh, is to publish yearly, and it is considered important that the crude observations should be given in detail in order that the means of verification may at all times be at hand, and as I believe the Lucknow observations will be found equal to any that are made, it may be desirable that ours should be published in the same form. It has, however occurred to me that if a copy of our crude observations, with all the details necessary in case of need for the verification of our computations, were made over to the Royal Astronomical Society, in whose custody they would always be available, that then there would be no absolute need of publishing more than our results, which might appear from time to time in their memoirs. I have accordingly placed myself in communication with the Secretary, who is also one of the most influential members of the Society, and have lately been favored with his opinion, and find that he coincides with me in thinking that this mode of publication would have all the advantages that I propose, while the saving of expense would be great. I am also told that on the proposition being formally made, I need have little doubt but it will be accepted by the Society, but that according to an established rule, which has in no instance been departed from, the printing must be done at the King's expense.

I do not apprehend that the king would refuse to pay the cost, which could not be very heavy, but it will be proper before taking further steps, to ascertain whether this course would be acceptable to his Majesty, or whether he would not prefer to expend a much larger sum in order that the volumes might appear solely in his name.

My establishment being more efficient for making observations than for reducing them, our computations are still very much in arrears, but we have entered upon a portion of the reductions for 1844, and I hope before the end of the year to have made great progress with them. I

must not close this report without expressing my satisfaction with the zeal and industry of my assistants who, with the exception of one, are young Hindoos from the College of Agra and the Allahabad school.

I have, &c.,

(Signed) R. Wilcox, *Lt.-Col.*

Director of the King's Observatory.

Royal Observatory,

Lucknow, the 9th July, 1846.

From Lieutenant Colonel R. Wilcox, *Superintendent of Observatory,*

To Colonel A. F. Richmond, C. B. *Resident at Lucknow,*

Dated Lucknow, 24th March 1848.

Sir,—I have the honor to submit to you, for the information of the Right Honorable the Governor General of India, a report on his Majesty's Observatory, which is under my care.

The Meridian Instruments, i. e. the Transit Telescope and Mural Circle which are on the same scale and by the same makers as those of Greenwich, remain in excellent order. The Equatorial is still in the unsatisfactory state alluded to in former reports, and has in consequence been little used as a measuring instrument, the want of stability of the high pillar on which it is mounted is such, that it is difficult to form any judgment whether the apparent defects of the instrument are not mainly to be attributed to the defects of the pier alone.

The Magnetical and Meteorological instruments for daily observation are in perfect order.

The meridian instruments have been employed, as in former years, in determining the places of a great number of the smaller stars, by at least 10 observations in right ascension and north polar distance of each; the Moon and Moon-culminating stars are observed as frequently as possible, the larger Planets when they are south of the Equator at all hours; and whether north or south at all hours during the day whenever they can be seen with sufficient distinctness, and favored as we are by climate and position. I have remarked that we have occasionally been successful in continuing our day light observations for two months longer than appears to have been practicable at Greenwich, of the smaller Planets; Ceres and Vesta, and sometimes Pallas, have been observed whenever it has been practicable; of these

likewise we have been able to collect a larger number of observations in one year than has been done in Europe. On account of their small size we have not been very successful in seeing Pallas and Juno, the latter indeed has seldom if ever been satisfactorily observed.

The time has scarcely yet arrived when observations made at so distant a spot could be turned to any account of those Planets which have been recently discovered. We have not however failed to observe Neptune from the month of November until it passed the meridian too late to be visible.

The hourly observations of the magnetical and meteorological instruments I propose to continue until the close of 1848, and if on reference to England it should appear desirable, they can at a trifling cost be carried on beyond that time; but as it is improbable that the King will choose to incur the expense of printing them, and they have already become very voluminous in manuscript, I doubt the advantage of it; while on the other hand, the time now bestowed on their reduction could be employed in reducing our astronomical observations, the computations of which, though more forward than at a similar period last year, are still much in arrears; complete abstracts of our magnetical and meteorological registers will continue to be forwarded to the Royal Society.

With respect to the printing of our astronomical observations, in my last report I mentioned, that the course which on account of there being no printing press on the spot, appeared to me to be fraught with the least difficulty, was to request the London Astronomical Society to print our results, that is, results only, in their memoirs, which at the King's expense, I have no doubt they would willingly consent to do, complete copies of our crude observations being furnished to them to be placed amongst their records for reference; but I expressed a doubt whether on the question being submitted to him, the King might not prefer to expend a larger sum in order to have the volumes appear solely in his own name. Mr. Davidson had the kindness to take much trouble in ascertaining the King's wishes on the subject, and the result was as I had anticipated, that he preferred the latter course, though possibly because the cost weighed heavily in the King's estimation, some months elapsed before permission reached me officially to expend the sum of six thousand rupees in printing the observations of 3 successive years.

This sum, in the absence of proper data on which to found a calculation, I had myself named as likely to be sufficient, but I have lately received estimates from two of the most respectable of the London printers (one being the printer of the Greenwich observations) which would make the cost nearer to 12,000 than 6,000 rupees for 3 volumes ; the question therefore remains for the present unsettled, but it seems desirable that the mode of printing which I first gave the preference to, should be finally adopted. The great advantages that would be found in having a printing press working under my own eye have not escaped me, but Colonel Boileau's experience proves that the services of a professional printer would be absolutely necessary, and hence it is doubtful whether by this means the expense would be materially lessened.

I have mentioned in former reports that a translation of Brinkley's Astronomy, made under my supervision, was being printed at the King's Lithographic press : I have now the pleasure of announcing its completion.

I have, &c.

(Signed) R. Wilcox, *Lt.-Col.*
Supdt. of Observatory.

Observatory, Lucknow, the 24th March 1848.

A Sixteenth Memoir on the Law of Storms ; being the Hurricanes of the Maria Somes *and other ships, in the Southern Indian Ocean, in March* 1846. *By* Henry Piddington, *President of Marine Courts of Enquiry, Calcutta.*

The appalling catastrophe of the suffocation of fourteen individuals, with the maiming of others, and the severe sufferings and narrow escape of the whole detachment of 320 men, women and children of H. M. 90th Foot, on board the transport ship *Maria Somes* from Ceylon to England, excited much attention both in India and in England at the time, and I spared no pains to collect from every quarter data for the investigation of this hurricane. I have not been very successful, but as ships do not now sail in fleets we have usually a task of no small difficulty to collect together the scattered logs of the few vessels,

which may have crossed a frequented tract of ocean about the time of any severe weather, as long periods elapse before their return to the port, if they return at all. This and the completion of my new work* has prevented me from publishing sooner the results of what I had obtained. Nevertheless it will be seen that the facts demonstrate a new peculiarity in these mysterious phenomena, of no little import to the Mariner, since it may occur in other parts of the world as well as within the dangerous tract to which this Memoir alludes. I refer to the summary at the end for full details of this new feature in the Hurricanes of Tropical Seas.

Abridged Log of the Barque ORIENT, *Capt.* WALES, *reduced to Civil time.*

22*d March*, 1846.—At noon in Lat. 8° 12′ South; Long. 79° 28 East; running to the South and S. S. W.: Westerly winds.

23*rd March.*—Noon, Lat. 10° 17′ S.; Long. 79° 00′ East; towards noon heavy S. S. E. swell; thick cloudy weather and wind S. S. W.; P. M. W. N. W. wind died away.

24*th March.*—Gloomy dark weather and drizzling rain with a heavy short S. E. swell. No observations; Bar. 29.76, Simp. 29.62, Ther. 81°; P. M. light westerly breeze and then "wind veering all round the compass," with dirty unsettled weather. Very heavy southerly swell.

25*th March.*—A. M. squally from the N. W. and N. E. and veering again from North to East. No observation; Bar. 29.57, Simp. 29.46; P. M. thick, rainy, gloomy, heavy appearance. 4 P. M. Bar. 29.50; at 6, 29.45; at 8, 29.40; at 10, 29.40; at midnight 29.35. Wind variable from N. W. to N. E, S. E. and by 8 P. M. a gale from E. ½ S. when the ship hove too on the port tack; blowing in hard squalls with thick weather to the Eastward. Simpiesometer also fell from 29.40, at 4 P. M. to 29.20, at midnight; wind at 10 P. M. East; at midnight E. b. N.

26*th March.*—A. M. furious squalls and high sea; wind N. E. b. E. at 2. A. M; E. N. E. at 4; E. b. N. at 6; and E. b. S. at 8. A. M.

At noon wind is marked as "veering gradually round to South" with very heavy squalls and a high confused sea, and from 8 till noon "gale

* The Sailor's Horn Book for the Law of Storms in all parts of the world. Jan. 1848.

75
80
85
10
15
Chart
TO THE SIXTEENTH MEMOIR
ON THE
Law of Storms
IN INDIA
being
THE MARIA SOMES ORIENTS
AND DUNCAN'S HURRICANES
In the Southern Indian Ocean
March 25th to 30th
1840
By
Henry Piddington

blew furiously with every few minutes terrific gusts threatening to dismast us. Sea running tremendously in every direction and perfectly white with foam. At noon a perfect hurricane." Bar. 2 A. M. 29.35, Simp. 29.20, Ther. 81° ; at 4, 29.30, Simp. 29.16 ; at 6, 29.30, Simp. 29.16 ; at 8, 29.20, 29.5. At 12, 29.10, and 28.95 ; Simp. 29.95. P. M. hurricane, wind veering from W. S. W. to W. b. N. Bar. 29.10, Simp. 28.95. At 6 P. M. the same, wind marked W. N. W. and at 9, N. N. W. ; Bar. at 6 P. M. 29.30, Simp. 29.20.

27th March.—A. M. hard gale N. N. W. ; squalls not so strong ; Bar. 29.40, Simp. 29.30. 5 A. M. moderating fast ; Bar. 29.50, Simp. 29.40. 9 A. M. bore up to S. b. W. and made some sail ; Bar. 29.65, Simp. 29.55. 10 A. M. squally, thunder, lightning and heavy rain. 11 A. M. hove to again and furled every thing, Bar. having fallen to 29.60, and Simpiesometer to 29.50, in a run of 15′ to the S. b. W. P. M. fresh gale, North, hard squalls and heavy cross sea. 6 P. M. Bar. 29.60, Simp. 29.50, Ther. 80°. 9 P. M. bore up again and made some sail, steering S. W. with wind North.

28th March.—A. M. steering S. S. W. and South. 6 A. M. hove too again on account of the weather and sea ; noon wind North ; Lat. Indiff. Observation, 12° 33′ S. Long. Acct. (worked back from the 29th) 76° 54′ East ; Bar. not noted. P. M. bore up ; wind North ; course South, and at 5 P. M. S. W. b. S. 6 P. M. Bar. 29.60, Simpiesometer 29.50, Ther. 80½°. Midnight hard gale, " very threatening appearance in the weather, not wishing to run more to the South *as the weather got worse every mile*" and Bar. falling again to 29.50, and Simp. 29.43, hove too at 1 A. M. on the 29th, having run 86′ South and S. W. b. S.

29th March.—A. M. wind at N. N. W. 6 A. M. hard gales with squalls and rain and a very high sea running in all directions ; Bar. 29.55, Simp. 29.50 ; noon more moderate ; Lat. 14° 36′ S. Indiff. Observation ; Long. 76° 28′ East. P. M. wind North. 4 P. M. bore up again. 8 P. M. wind N. N. W. Lightning to the South at 10 P. M. ; midnight severe gusts.

30th March.—A. M. wind N. W. moderating to noon, when fine ; Lat. 15° 4′ S. Long. 75° 45′ East ; 8 A. M. Bar. 29.80, Simp. 29.78, Ther. 80½. Noon Bar. 29.87, Simp. 29.77.

31st March.—Light Westerly breeze ; 7 A. M. Bar. 29.90, Simpiesometer 29.80, Ther. 82° ; Lat. Obs. 15° 46′ S. Long. Chr. 75° 14′ East.

Abridged Log of the French Ship LE GRAND DUSQUENE, *from Calcutta to the Mauritius. Civil time.*

25*th March*, 1846.—Noon wind N. N. W. ship standing to the S. W.; Lat. 10° 4′ S. Long. 81.22, East (of Paris?)and thence 83° 42′ East of Greenwich. For the preceding 24 hours the weather cloudy and a high confused sea, the wind from N. N. W. to N. W. P. M. squally wind N. N. W., ship standing to the S. W. under double reefs.

26*th March*.—A. M. wind N. N. E. to North; heavy sea; noon Lat. 11° 19′ Long. 79.54, E. Paris; 82.14, Gr. P. M. wind North. 5 P. M. N. N. E. to N. E. weather and sail as before to midnight.

27*th March*.—Heavy squalls, dark weather with torrents of rain. A. M. wind N. E. and East to noon, when Lat. by Acct. 12° 20′ S. Long. 77.54, E. Paris, 80° 14′ Gr. P. M. to midnight heavy gale, apparently increasing to hurricane violence, from the N. E. to 4 P. M. N. E. to E. N. E. to 7 P. M. and E. N. E. to midnight; ship scudding right before it under foresail, and double-reefed maintopsail. 11 P. M. hauled up the foresail and the maintopsail blew away. Hove or broached to (it is not noted which).

28*th March*.—A. M. wind N. N. E.; vessel buried in the sea. At 3 A. M. cut away the mainmast, which carried away the foretopmast and head of the foremast, the foremast, foreyard and bowsprit also went with them. At noon wind marked N. N. E.; Lat. Acct. 13° 18′; Long. 77° 15′ E. Paris, or 79° 35′ Gr. P. M. wind N. N. E.; threw 120 bags rice overboard; 5 P. M. wind N. N. W. and variable to midnight.

29*th March*.—Weather the same; 5 A. M. wind N. N. E.; 8 A. M. more moderate. Noon, Lat. 13° 43′ S., Long. 77° 38′ E. Paris; 79° 58 Gr. P. M. wind N. N. E. At midnight fine.

30*th March*.—Weather continuing fine; rigging jury-masts and throwing cargo overboard.

Noon Lat. 13° 47′ Long. 78° 00′ E. Paris, or 80° 20′ E. Gr.

On the 31st Lat. 14° 54′ S. Long. 74° 4′ E. Paris, 76° 24′ of Greenwich by observation and Chr. by Acct. Lat. 14° 42′ and Long. 77° 37′ East of Paris, or 79° 57′ of Greenwich. The vessel and having been drifted, as would appear from her log, 213′ to the westward and 12 miles to the Southward, or about 71′ per day for the three days

of heavy and hurricane weather; the exact drift being S. 87° W. 214 miles, but as it was undoubtedly at the highest rate when the vessel was nearest the centre, we may call the drift $3\frac{1}{2}$ degrees of westing and 12′ of southing, and allowing the southing, which is a trifle, to have been made equally on each day allow this to be a westerly or storm-wave drift.—

For the 27-28th, when the *gale* increased to hurricane violence, of one degree, which would give us as a corrected position for the 28th, Lat. 13.22. Long. 78.35 East of Gr.

For the 28th to 29th of two degrees, giving for the 29th, Lat. 13°51 S. Long. 76° 58′ E. of Gr.

For the 30th, being at the close of the gale, of half a degree, giving for that day Lat. 13° 59′ S. Long. 77° 06′ E. Gr.

On the 31st the position as shown by observations is 14° 54′, S. Long. 76.24, E. of Gr. and these corrected positions are thus marked on the chart. They are, it is true, to some extent uncertain, but the log is very well kept and the leeway carefully marked, and had the difference between the position and account been owing to the drift or storm current it would have been an excess of *southing* and not of westing, the wind throughout being from N. N. E. to N. N. W. This is therefore a distinct case of the storm-wave.

Abridged Log of the Ship Cove, *Capt.* Spratt, *from Calcutta to the Mauritius—Civil time.*

On the 23d *March* 1846—the *Cove* was at noon in Lat. 11° 18′ S. Long. 79° 46′ E. having run from midnight with a smart rainy breeze variable from N. N. W. and N. N. E. to the S. Westward, but at noon it was calm and rainy *with a high sea from S. W. and also a N. Westerly* one, creating a very confused sea together. P. M. calm, rain and variable, but at 8 P. M. breeze increasing to a gale; at 9 wind E. S. E. with hard squalls, rain and high sea.

24th March.—Gale increasing to noon with a high S. E. sea. Lat. Acct. 12° 49′ S. Long. 77° 46′ E. P. M. wind S. E. ship running till midnight to the S. W. and S. W. b. W.

25th March.—The same wind, but fine weather though with hard squalls at times. Lat. Acct. 14° 15′ S. Long. 75° 16′. P. M. P. M. The same, decreasing at midnight to a fresh breeze but a heavy sea breaking on board at times.

26th March.—By noon fine weather and a strong trade. Lat. Acct. 15° 38′ S. Long. 73° 5′ E.

Abridged Log of the Barque DUNCAN, *Capt.* FAWCETT, *from Cadiz to Calcutta—reduced to Civil time.*

26th March, 1846.—At noon the *Duncan* was in Lat. 16° 47′ S. Long. 78° 19′ East, with strong breezes from East and squally weather since midnight; a high cross-sea and vessel labouring and lurching heavily. Simpiesometer oscillating a little between 29.76 at 2 A. M., and 29.79; at noon 29.76. Running 7 knots to the N. N. E. P. M. wind E. b. S. To midnight the same. Simpiesometer 29.68, Ther. 81°.

27th March.—A. M. wind East, squally and rain; course N. N. E. 5 knots; noon Lat. 14° 43′ S.; Long. 78° 54′ E.; Simpiesometer 29. 59, Ther. 81°; Ship under double reefs. P. M. increasing wind and gloomy looking weather. "Prepared for a hurricane, and at 6 P. M. hove too with wind East; at midnight strong gales, hard squalls and vivid lightning.

28th March.—To noon lying too with a heavy gale, hard squalls, torrents of rain and vivid lightning occasionally; heavy sea getting up. Wind marked E. N. E. Lat. Acct. 14° 11′ S.; Long. 78° 16′ E.; Simpiesometer 29.46, Ther. 82° P. M. Heavy gales; N. E. b. N. At midnight vivid flashes of lightning all round the horizon; Simpiesometer 29.48.

29th March.—A. M. to noon heavy gales and high sea; 4 A. M. wind N. b. E.; 10 A. M. North; "5 A. M. a most singular phenomenon occurred about two miles astern of the ship; the water was rushing and foaming up to an astonishing height, gyrating round a centre and passing the track (wake*) of the ship with astonishing velocity. The diameter or breadth of the vortex of the whirlwind could not be less than 2 miles from the appearance of its spread, and how far the circle of its attraction extended I was unable to guess."

Noon no abatement of the gale and a very high sea; Lat. observed 14° 45′; Long. 78° 00′. Simpiesometer 29.50; Ther. 82°. P. M. strong gale N. b. W.; 6 P. M. N. N. W.; 4 P. M. beginning to moderate; midnight strong wind only, with squalls and lightning; Simpiesometer 29.60.

30th March.—Noon moderate and fine; Lat. 14° 20′; Long. 78° 50′; Ther. 63°.

* As she was then lying to.

Abridgment of an extract from the Log of the Transport MARIA SOMES, *(No. 24),* WILLIAM KING, *Commander, from Ceylon to England. Civil time.*

It is necessary to note here that this extract from the Log is so far imperfect that it begins on the 27th March only, though it would appear, and this, as will be seen is important, that they had had some bad weather before, as indicated by the expressions which I have marked with commas or in italics. A Mauritius newspaper says that she "experienced a hurricane in 15° S. 78° East;" which may be the approximate position of this day?—and another that the *Maria Somes* experienced "dreadful weather from the 24th to the 31st March," so that we certainly have not the whole of the bad weather, but only the latter part of it.

27th March, 1846.—A. M. moderate winds, variable,* and cloudy with squalls and rain; lightning from the Eastward; heavy cross sea. In third reefs, furled foresail; 6 decreasing wind, and hazy; out 3rd reefs and set reefed foresail. At 8 light wind and cloudy; *out reefs of courses, to dry, being split; sea going down and every appearance of fine weather. Barometer still down to* 28.50, *no change.* Course S. S. W. 36′ to noon. P. M. course S. S. W.; wind now marked W. N. W. with which the log is marked to 3 P. M. 14′ to the S. S. W., making altogether from midnight 50 miles run to the S. S. W. P. M. moderate wind and sea going down; *no change in the Barometer; still standing at* 28.50, 1 P. M. close reefed fore and maintopsail, unbent the split mainsail and commenced bending the best foresail; "the gale increasing or *westering* (the word is *pestering* in MSS. and I am doubtful which was meant;) put the courses below. At 2 increasing "furled foretopsail and hove too with ship's head to S. S. W.; wind at West veering to the North;" secured yards, sails and every thing for bad weather. At 3 a terrific gale burst on the ship, throwing her completely on her beam ends; sea drifting over her in the most furious manner, when she lost the three topmasts, jib boom, &c. At 8 blowing a dreadful hurricane to midnight.

28th March.—A. M. "hurricane still raging in a most terrific manner; at 2 A. M. wind veered from N. W. to North and back to West."

* Direction not marked.

During the whole day the vessel in the utmost distress and people suffocating; crew nearly all paralysed with fear; direction of the wind not given. During the night the hurricane sensibly moderated. It is noted that "three strong men were required to carry a hammock rolled up into the mizen rigging," from the excessive violence of the wind.

29*th March*.—"Hurricane blowing with unabated violence:" 1 P. M. cut away the mainmast; some abatement taking place hatches were partly opened and *fourteen persons found suffocated!* Even in the cuddy the passengers women and children were in a dying state from exhaustion. Direction of the wind is not marked.

30*th March*.—"Continued gale and heavy rolling sea; Barometer is stated to be" rising from 28.20, to 29.20, and the gale subsiding fast; Lat. observed 16° 55′; no Longitude given.

31*st March*.—Moderate and cloudy. Head S. W.; wind S. S. E. Lat. observed 17° 05′; Long. 78° 07, East.

Abridged Log of the American Ship LOO CHOO, *Captain* HATCH, *from Canton to New York—reduced to Civil time.*

28*th March*.—Noon to midnight running to the W. b. S. $\frac{1}{2}$ S. 99$\frac{1}{2}$ miles, with the wind E. S. E. brisk trade and squally; position at noon not given.

29*th March*.—A. M. to noon the same course, 106 $\frac{1}{2}$ miles. No position given; P. M. to midnight the same course, 108 miles. Breeze increasing and sail reduced; midnight closereefing, blowing very hard in squalls.

30*th March*.—At 3 A. M. "gale suddenly increasing," hove too; head S. S. E., wind therefore about E. b. N. at 6 A. M. and to noon the course (ship's head) is marked as "South off to North." Ship hove too with only a tarpaulin in the mizen rigging; daylight "increasing and veering to the Southward." By noon had lost maintopmast, boats, &c. Lat. 18° 00′ S.; Long. 77° 33′ East by Acct. 1 P. M. cut away the mainmast. Wind marked as "about South," and from 1 to 4 as "South to West," and "ship lying West to North." At 4 the wind abated a little. At 5 quite moderate and set the foresail. At 8 P. M. wore, and at midnight fine, being in Lat. 17° 38′; Long. 76° 00′.

31*st March*.—Noon, Lat. 18° 04′; Long. 76° 00′ E.

SUMMARY.

As there are evidently the records of two or three separate storms in the foregoing documents, I shall begin, in explaining the reasons for the tracks assigned to them, with that which is first in order of date, as well as to the Northward on the Chart, which is the *Orient's* hurricane. This ship was evidently gradually approaching a zone of threatening weather from the 24th of March, or rather from the P. M. of the 23rd. On the 25th the Barometer had been and continued steadily falling, and by 8 P. M. on this day she had "a gale" from the E. $\frac{1}{2}$ S., and hove to on the port tack. Simpiesometer falling from 29.40 at 4 P. M. to 29.20 at midnight; the Barometer from 29.50 to 29.35. "Thick weather to the Eastward" is also noted. There is no doubt then that by this time she was involved in the vortex of which the centre bore about N. by W. from her at midnight. By the rule given at page 199 of my new work, the *Sailor's Horn Book*, the fall of the Simpiesometer being taken as the average one,* of about ·025 per hour, the distance of the centre from her between 8 P. M. and midnight, or say at 10 P. M. may have been about 200 miles, which would place it in about Lat. 8° 30′ S., Long. 77° 18′ E., and it was either travelling down much faster than it did on the following days, or this distance is too much; but in either case the rule holds good, because the seaman should never allow less than 10 or 12 miles per hour. If we suppose the track somewhat curved the distance is 215 miles to the position of the centre at Noon on the 26th, which for the 14 hours from 10 P. M. to Noon is $15\frac{1}{3}$ miles per hour. Hence if the distance was too much the rate of travelling assigned in usual cases corrects it sufficiently for all practical purposes.

From this hour, 10 P. M. we find the wind gradually veering, first as far as to the Northward of E. by N. as N. E. by E. for a couple of hours, then again to the Eastward, and gradually round to South at noon on the 26th. This is while the ship was making an average drift to the S. W. by W. and W. S. W., and would indicate a slight veering of the track (or a somewhat eccentric direction of the wind:) but it is clear that it passed close to the Eastward of the *Orient*, and very rapidly, by the veering from East at 10 P. M. to South at noon, or

* Because the Barometer tide was for this time, 4 P. M. to 10 P. M. against the fall; i. e. it was the time of the rise.

eight points of the wind-circle in the fourteen hours, and of these 7 points, or from E. b. S. at 8 A. M. to South at Noon, are marked in the last 4 hours of this interval; the Bar. is also marked at this time at 28.95. If the storm was really formed and coming down, as we have now supposed, its rate of progression at this time was $15\frac{1}{3}$ miles per hour, which is not excessive, and the "terrific gusts threatening to dismast the vessel" "with the sea running tremendously in every direction," are exactly the weather and sea to be now looked for. We find that in the interval from Noon to 2 P. M. the wind was W. S. W. to W. b. N., at 6 W. N. W.; and at 9 N. N. W. to midnight, the Barometer being "inclined to rise;" at 4 P. M. and at 6 it is marked 29.30. The wind continues up to midnight at N. N. W. From this it would seem that the vessel from being close upon the centre* which passed close astern (to the Eastward) of her, at noon was drifted rapidly into and round the Northern semicircle, and had the centre by 9 P. M. bearing W. S. W. of her position, the wind being then steady about N. W. to midnight. She may possibly have been carried now to the Southward by the storm-wave, as she might have been before to the Northward, by the same cause, being so close upon the centre. The track, as I have before explained, is marked in a straight line, but it does not follow that it really was one. The storm does not appear on this day to have reached the *Grand Dusquesne*, which vessel, at noon 26th, was at 280 miles from the *Orient*.

On the 27th March at midnight, we have the *Orient* at 1 A. M. with the wind still N. N. W., the Barometer and Simpiesometer rising a little. At 5 A. M. it is said to be "moderating fast," the Barometer having risen one-tenth since midnight, and by 9 A. M. it had risen to 29.65, and the Simpiesometer to 29.55. The ship now bore up and ran 15′ to the S. b. W. but by 11 A. M. Capt. Wales prudently hove to, again, the Barometer having fallen to 29.60, and Simpiesometer to 29.50, with very threatening weather and a high confused sea. At 6 P. M. the Barometer had not risen and the wind was still at North. At 9 she bore up again with the wind still at North. I shall remark presently on the peculiarity of the wind remaining so long at North

* The reader will recollect not only that the centre (or focus) is of course an imaginary point or space, but moreover that it is probable that while many circular storms have no central calm space, some have a very wide one. In time we shall no doubt be able to class these varieties of hurricanes.

and N. N. W. as it did. From the best calculation I can make of the *Orient's* position at noon on the 27th, she was in Lat. 11° 31′ South ; Long. 77° 00′ East, and the *Grand Dusquesne* was at this time 205 miles to the E. S. E. of her, with a gale commencing in the usual way, with torrents of rain and wind, till noon, from N. E. to East, showing that she was on the outer verge of a separate vortex.*

The *Duncan* also, at this time, Noon 27th, being 223 miles to the S. E. b. S. of the *Orient*, was under double-reefs, with the wind at about East. In the afternoon she was preparing for bad weather, being also just on the verge of a vortex, which both ships soon after fell into, the *Duncan* heaving to at 6 P. M., and the *Grand Dusquesne* running down on a S. W. and W. S. W. course to midnight, (when she hove or broached to) so as to approach the centre rapidly, for she was obliged to cut away her mainmast by 3 A. M. on the 28th. I have thus placed the centre of the *Orient's* hurricane for this day in 11° 30′ S. ; Long. 76° 30′ East, or 30 miles to the Westward of her position, extending the circle to 150 miles in diameter only, as supposing another vortex forming for the *Duncan* and *Grand Dusquesne*, to the Eastward, which by the wind, must have been the case. We can say nothing of the *Maria Somes'* position on this day, or rather of the *supposed* position of that vessel according to the very imperfect log and newspaper accounts which we have from her ; and she had at this time the wind about West, so that she was on the *Northern* edge of another vortex. Her very low Barometer (which appears to have remained so from the previous bad weather) is some evidence that it was affected by the *Orient* and *Grand Dusquesne's* storms.†

For the 28th of March we find the *Orient* running and drifting down with a gale (always from the North) 65 miles to the S. S. W. of her position on the 27th ; and as the wind was North at noon the centre of her storm must either have moved down parallel to her track or

* This ship unfortunately had no Barometer, at least none is noticed, and this is the more to be regretted that she probably from her position felt the effects of both storms.

† The only instance in which I have been able to obtain a good Barometer note when contemporaneous and closely parallel storms were undoubtedly raging, is that of the ship *Eliza*, Capt. McCarthy, IX. Memoir, Jour. As. Soc. Vol. XII. p.—in which a sudden fall of an inch took place, both storms travelling with considerable rapidity. In the case before us the storms were nearly stationary, that is moving very slowly, as we shall see.

slowly away to the S. W. or S. S. W., so as to keep her always on about the same bearing from its centre. The *Duncan*, which ship had been lying too from 6 P. M. of the 27th, was on this day at noon in Lat. 14° 11′; Long. 78° 16′, her position being tolerably well ascertained, lying too in a heavy gale with the wind at E. N. E., making the centre to bear N. N. W. from her, a bearing which would place it nearly 40 miles to the *Eastward* of the *Orient's* position; for that ship was now lying too with a Northerly gale, and thus *must* have had the centre to the *Westward* of her. It follows therefore that the *Duncan's* hurricane and that of the *Orient could not have been the same storm.* The *Grand Dusquesne*, which vessel was dismasted at 3 A. M., had the wind at N. N. E., and the two ships were at this time 52 miles apart. These winds and the positions of the ships would place the centre of their hurricane in Lat. 13° 00′ S.; Long. 77° 43′ E., but I have marked it in Lat. 13° 12′; Long. 77° 49′ E., or 21 miles to the S. E. of this spot, both to allow of striking the circle of the *Orient's* storm, and because the exact position of the *Grand Dusquesne*, as shown precedingly is very uncertain. The *Orient* was also probably farther to the Westward than she appears on the chart, which would allow the two storms (for there undoubtedly *were* two, since the *Duncan's* position is so carefuly given and the *Dusquesne* passed so close to the centre but a few hours before) more space for their development. Supposing them at a reasonable distance, we can now understand very clearly by looking at the *Orient's* track how it was she found "the weather growing worse every mile she made to the Southward," when she attempted to bear up after this time to midnight.

The *Maria Somes* on this day, the 28th, was probably during the whole of it close to the centre of her hurricane, which was "veering from N. W. to North and back to West," which is an instance of what I have advanced in another work, and in a former Memoir, the XIII. Journal, Vol.—of the *incurving* of the winds.* And it must have been of small extent, as it did not reach the *Duncan*, which ship, it will be recollected, was on the Southern quadrant of her storm; yet the two, if

* For if we place in imagination a vessel on a storm card with the wind at West, any incurving must make it, in the Southern hemisphere, N. Westerly and gradually Northerly, by which time she will be drifted (and the storm have moved down) so as to bring it again to West if it is moving to the Southward as this was.

we have laid down the *Maria Somes*' position at all correct, were not more then 90 miles apart! I have thus given the *Maria Somes* a storm circle of 120 miles in diameter only for this day, marking a small incurving vortex at the centre.

We have thus the remarkable fact ascertained of THREE separate hurricanes raging together at the same time, of which two certainly were of excessive, and one of them of terrific violence, since it dismasted and nearly destroyed the *Maria Somes* and dismasted the *Loo Choo* on the following day, and this too occurs within a space of five or six square degrees, the centres of the two most distinct ones not being 4 degrees apart, and all this occurs in the fatal Storm Tract* to which I have so frequently referred and so urgently warned the mariners of our Eastern seas against.

For the 29th of March, we have now the *Orient,* which ship in the latter part of the 28th had run 86′ to the Southward, lying too at noon with the wind still at North, so that the centre of her storm must have been bearing West of her position, which however must be on this day considered as very uncertain, but there is no sort of doubt that it was travelling down with her somewhat as shown in our chart. The *Duncan* and *Grand Dusquesne,* 78 miles apart, had, the first with the wind about N. b. W., her "gale continuing without abatement," the second with her storm abating rapidly and the wind about N. N. E. This last wind, as will be seen by the chart does not agree with the *Duncan's* storm as before, but rather appears (supposing always positions to be tolerably correct, though in truth they are, after a continuance of such weather but approximations) as if the *Dusquesne's* storm had disappeared, since it was getting fine at noon, or had fallen into the *Orient's* storm circle, leaving a smaller one for the *Duncan.* We may suppose it possible that the fearful whirlwind seen by the *Duncan,* at five A. M. was an effect of this partial coalition between the storms.†

The *Maria Somes* on this day, 29th, cut away her mainmast, and seems during the most of the day to have had the hurricane unabated as to violence. Having no wind marked we can only place the centre near to her supposed position, and as the *Loo Choo* did not begin to feel

* 5° to 25 S. and 75° to 105 East.

† This coalition of storms has been distinctly and repeatedly observed in the case of hail-storms. See Quarterly Journal of Science for 1829, pp. 214, 215. *Count de Tristan on the Progress of Storms.*

the gale before midnight and had to cut away her mainmast on the 30th at 1 P. M. close to, but to the West of the centre, we may say with much probability that the two were the same storm, and that like the *Orient's* it was moving slowly down, to the South a little Easterly, without increasing much if at all in size.

On the 30th March, we have the *Orient* with the wind veering to N. W. and moderating to noon, when it became fine, hence we conclude that her storm had either broken up or moved away from her; and I have thus marked no circle for it on this day. The *Dusquesne* and *Duncan* had also both fine weather on this day.

We have thus only the *Loo Choo's* hurricane dismasting her with the wind about South, and the *Maria Somes* with her part of it subsiding rapidly and the Barometer rising fast. Having also her Latitude for this day and the *Loo Choo's* position well determined we are enabled to say with tolerable certainty that the diameter of the *Maria Somes'* hurricane did not much exceed 120 miles, which is that which I have assigned to it on this day, and it must either have been of small extent or moving very rapidly,* for at 5 P. M. it was quite moderate with her.

The rates at which these different storms travelled appears to have been as follows:—

	Orient's Hurricane	
	for the 24 hours.	*Per hour.*
† 25th to 26th,.....	....	$15\frac{1}{3}$?
26th to 27th, W. S. W.	64 miles,.....	2.7
27th to 28th, S. W. b. S. $\frac{1}{2}$ S.	74	3.0
28th to 29th, S. b. W. $\frac{3}{4}$ W..	130	5.5
	Grand Dusquesne's Hurricane.	
27th to 28th, S. W. b. W. $\frac{1}{4}$ W.	122	5.0
28th to 29th, S. b. W. $\frac{1}{4}$ W..	108	4.5
	Maria Somes' Hurricane.	
28th to 29th, S. b. W. $\frac{1}{4}$ W..	42	1.8
29th to 30th, S. b. W.....	102	4.5

The mean track of the three storms is S. W. $\frac{1}{2}$ S. and their mean rate of travelling excluding the first day of the *Orient's* storm 3.9 miles per hour.

* Or contracting, *or lifting up* which there is reason to suppose may be different modes by which hurricanes terminate. *Sailor's Horn Book*, p. 261.

† Uncertain.

At first sight these appear too capricious to be entitled to much confidence, but we are fortunately able to corroborate them by our former knowledge of this peculiarity of the hurricanes of this tract. It will be seen by reference to the eleventh of these Memoirs, Journal, Vol. XV. p. 69, that the hurricane of November 1843, in this same latitude, and in from 82° to 88° East, and which has been traced by a sufficient number of Logs to entitle us to consider its track and rates of travelling as nearly correct, moved as follows:—

Hurricane of Nov. 1843.

	for the 24 *hours.*	*Per hour.*
1st day.....	60 miles.....	2.5
2nd ditto	32	1.3
3rd ditto	135	5.6
4th ditto	47	2.0
5th ditto	57	2.4

Evidently showing that tendency in all the storms in this dangerous locality which Colonel Reid so sagaciously conjectured from a consideration of the *Albion's* hurricane of 1809.

"Not to be moving onward with the regular progression of those which have been traced on the charts, but more to resemble the commencement of a whirlwind floating with an irregular motion, as waterspouts do in calm weather."

I have slightly altered this quotation from Col. Reid's Law of Storms 2d Edition, p. 241. It will be recollected that the *Albion's* was a hurricane of terrific violence, in which three East Indiamen, out of a fleet of nine, foundered. *Did they meet with a whirlwind like the Duncan's?*

Be this as it may, the singular occurrence of *three* hurricanes togeher within so confined a space, and the danger of one storm so heightened by the awful phenomenon above alluded to,* shows clearly that our cautions for the last seven years to mariners in crossing this tract are by no means superfluous. It was however so far providential that they did occur at the same time that, for the *Maria Somes, Loo Choo* and *Grand Dusquesne,* it might have been destruction to have fallen in with a second

* The position of which I have marked on the *Duncan's* track, close to Noon of the 29th. It may have been the joint effect of the *Maria Somes'* hurricane which was the nearest, and that of the *Duncan's,* and this whether an electrical or dynamical phenomenon. Mr. Redfield in his recent memoir on the Cuba Hurricane of 1846 p. 94 mentions an instance of a local tornado of resistless violence occurring in the midst of it, and he states that in America and the West Indies they are not unfrequent.

hurricane, which they might have done if the storms had succeeded each other at intervals of a day or two.

I should perhaps explain that I have not noticed in these remarks the run of the *Cove* across the middle of the space which a day or two afterwards was occupied by the hurricanes, because it is doubtful if her gale at S. E. was any thing more than a stormy trade. It might however have been the commencement of the "dreadful weather," mentioned in the newspaper extract quoted at p. 523 as prevailing from the 24th to the 31st, and as we frequently obtain in the course of time additional documents I have thought it right to give this one as a record.

MISCELLANEOUS.

The Liquidamber tree of the Tenasserim Provinces.—By the Rev. F. MASON.

"Did you ever see in this country the tree which produces the Balsam of Tolu?" a gentleman once asked the writer. "I never did," was the reply. "I have one in my compound," he continued; but unfortunately his compound was two hundred miles distant. Years passed away and I found myself beneath this tree in flower, and soon discovered that it was not *Myrospermum toluiferum*, but *Liquidamber altingia;* and that it produced not Balsam of Tolu, but liquid Storax.

The tree is indigenous on the coast, and in some sections is quite abundant. A considerable stream in the Province of Mergui derives its name from this tree, in consequence of its growing so thick on its banks. It seems to have escaped the notice of Dr. Helfer, for, if I recollect right, it is not once alluded to in any of his reports, nor has it ever been brought to notice by any one; if we except a Catholic Priest, a resident of Rangoon, who has introduced it in a little Burmese medical treatise that was lithographed a few years ago by Col. Burney, who took a lithographic press with him into Burmah.

The Padre seems however to have been ignorant of Botany, for he describes it as the tree which produces the Balsam of Peru (*Myrospermum Peruiferum*) and which belongs to a different natural family. The medicinal properties of their exudations too, are materially different. Liquid storax, the production of this tree, is described by Lindley merely as "A stimulating expectorant substance—influencing the

mucus membranes, especially that which lines the air passages." The writer of the Burmese medical treatise recommends the exude of the tree for the usual purposes to which the Balsam of Peru is applied, under the delusion that it is the same substance!

Here is a fine illustration of the fallacies of medicine. It is probable that this substance has been used in all the various cases many times by the author, and quite as much good done, and as wonderful cures effected, as if he had used the veritable Balsam of Peru. And the same glorious effects are still being produced, for the book is in the hands of many natives and is highly valued, but no part more so than this, because it points them to a production of the country, while most of the medicines mentioned are foreign productions.

It seems to me that our liquid storax might be made an article of commerce, but I know not how it sells in the market.

The tree is called by the Burmans နန်တရုတ် *Nan-ta-rouk.*

Note on a method of determining the Neutral Point of Barometers having small circular cisterns.—By Capt. J. C. Hannyngton, *24th B. N. I. Assistant Commissioner, Chota Nagpore.*

1. For any barometer having a circular cistern of small diameter, let h be the approximate height of the column of mercury, $\frac{1}{c}$ the ratio of the capacities of the tube and cistern, P the neutral point, and H the true height, then,

$$\mathrm{H} = h \pm \left(\frac{\mathrm{P} \sim h}{c}\right).$$

2. When two or more barometers are compared together side by side, the vacuum in each being equally perfect, it is for practical purposes assumed that after applying the small corrections for capillary repulsion, and difference of temperature, the actual heights of the several columns are equal.

3. Therefore if P, the neutral point of the instrument from which h is derived, and of which $\frac{1}{c}$ is the ratio of the capacities, be unknown; H may be obtained by simultaneous observations with another barometer, and this independent value of H may be put in the above equation, which will still remain true.

4. Hence it will follow that,

1st, When h is greater than H ; $P = h + (h - H)\, c$;

2nd, When h is less than H, $P = h - (H - h)\, c$.

5. Both cases are included in the following rule.

Rule. Multiply the difference between the true height of the mercurial column (ascertained by a correct barometer) and the approximate height as found by the instrument of which the neutral point is sought, by the reciprocal of the proper fraction expressing the ratio of the capacities of the latter instrument ; the product being added to or subtracted from the approximate height, according as that is greater or less than the true height, will give the neutral point that was required.

Example.	*Barometer.*	*Temp.*
Standard Instrument, ...	29.979	85
Barometer No. 36, ...	29.970	91
Barometer No. 36 observed	29.970	
Capillarity, ... +.029 Correction for +6° temp. ..... —.018	+0.011	
Approximate height,.....	29.981	
True height by Standard, ...	29.979	
Difference	0.002	
No. 36, Capacities $\frac{1}{48}$; Reciprocal,.....	48	
Product	0.096	
Approximate height,	29.981	
Neutral point of No. 36,.....	30.077	

6. The Neutral point of No. 36, as marked by the maker, is 30.075. The result here shown is a proof of the correctness of both the instruments used. The standard is that in the Surveyor General's office; No. 36 is a portable barometer by Newman, belonging to Colonel Ouseley.

7. As the Neutral point of portable barometers is liable to material alteration by the accidental escape of a small portion of mercury from the cistern, the above simple rule may be found useful, either for verification or discovery.

Proposed Archæological Investigation.

The discovery and publication of all the existing remains of architecture and sculpture, with coins and inscriptions, would throw more light on the ancient history of India, both public and domestic, than the printing of all the rubbish contained in the 18 Puránas.

The fact that Buddhism continued to flourish throughout India for many centuries, is to be ascertained from monuments almost alone. Buildings, coins, and inscriptions all point to Buddhistical ascendancy until the attacks of the Musalmáns under Mahomed Ghaznavi. In corroboration of this view we have the direct testimony of several Chinese pilgrims and the explicit statements of the Kashmerian History. But in none of the Hindu books is there any allusion to Buddhism. The institutes of Menu, the Ramayana, the Mahabharata, and the fabulous Puranas are all silent regarding Buddhism, as if that religion had never flourished in India. The publication of all the existing remains of Buddhism in the shape of architecture, sculpture, coins and inscriptions would I conceive be equally valuable for the illustration of the history of India, both religious and political, with the printing of the Vedas and Puranas. It is a duty which the Government owe to the country. The remains of architecture and sculpture are daily deteriorating, and inscriptions are broken or defaced; the sooner therefore that steps are taken for their preservation, the more numerous and consequently the more valuable these remains will be.

As Pliny in his Eastern Geography follows the route of Alexander, so an enquirer into Indian archæology, should tread in the footsteps of the Chinese pilgrims Hwan Thsang and Fa hian. Guided by them he would visit Thanesar and Delhi—Behat and Sadhora, Mathura and Samkassa, Kanoj and Ajudhya, Kapila and Kusinagara, Kasi and Pataliputra, Gaya and Rajagriha. All these places were esteemed holy by the Buddhists, and possessed topes built over relics of Sákya or of other Buddhas. But there are other places in Central India that should be carefully examined, of which Kasurata, the capital of the ancient kingdom of Chichavati, together with Kalinjar, which is mentioned in the Vedas, and Ujain the Ozéne of the Greeks, are the principal. The whole of Malwa, however, is full of ruins, both Bráhmanical and Buddhistical. In fact Hwan Thsang remarks that there were two

districts in India famous for religion—Magadha in the N. E. and Malwa in the S. W.

To conduct these researches in the most efficient manner would require the services of at least two persons, one of whom should be a good draftsman. But the one to whose judgment the selection of objects for preservation is to be confided should have a knowledge of the ancient history of India. He should be conversant with the sculptured forms and religious practices of the present day, and with the discoveries made by Prinsep and others in Indian Palæography and Numismatology; without such a head to guide the selection of objects worthy of preservation the labor of the most perfect draftsman would be thrown away.

A. CUNNINGHAM.

Extract of a letter from Capt. KITTOE.

"As the month is drawing to a close I may as well give you a brief sketch of my doings since my last, which I have given extracts of in the March No. of the Journal.

My last left me at Nawada about to visit Behar, &c. &c. I first went to Giriyek, and on my way visited the hot springs called Agnidhara. There are four springs, all very weak; the temperature in one was 125°. There is only one cistern here, much neglected; there have been temples in former times of which traces remain, also of many buildings. I next went to Buddha's cave, called Gadadwar, or as I explained it in my notes on Fa Hian's route, "Gridha Dwara." I examined both caves thoroughly except that I could not get to the end of the passage, which is insufferably hot and stinking from the bats; there have been several cavities originally made use of by ascetics. They are natural curiosities which have perhaps been slightly enlarged by picking out loose fragments. I am satisfied of this, as there are no tool marks which in a bad light I had imagined I saw last year. The rock is too hard to allow of it.

I could have wished to have been able to devote more time to Giriyek, but the exertion of climbing these barren rocks at this season of the year is too great to be repeated. I climbed the hill, to the tower called Jarasandha's; it is decidedly a chaitya, to the south of which, on the

highest peak, has been one much larger, and no doubt that called by Fa Hian "the throne of the Buddhas." I am now able to explain why the thousands of "grottos" are not to be found; "grotto" (grotte) is the proper definition for the residences of the Rishis, not "caves;" the whole eastern face of the hill and in other spots, there have apparently been numerous little chambers of brick and of stone from the water's edge to the top, not one of which is now entire; there have been bowers and larger buildings also.

From Giriyek I went to the Jain fane, called Pawa-puri and Pokarpuri; I am satisfied that this is a very modern work, not earlier than the reign of Shah Jehan; an inscription indeed tells you as much. The village of Pawa is 2 miles north; it has no mark of great antiquity; it was here Mahavir, the 24th Jain Tirhankar, was born.

From Pawa Puri I went eastward to the village called Gusserawa, where there are many idols, some extensive mounds (sites of temples) and several tanks. The idols belong to the later period of Buddhism. Here I was fortunate enough to get possession of a beautifully cut inscription which has lately been dug out of the mound; I purchased it for three rupees, and after taking correct fac similes in triplicate, I had it fixed into the outer wall of a modern temple in a niche. The inscription records the adoption, by a young bráhmin, of the Buddhist faith, and his subsequent admission to great honors as a holy personage. The name of Deva Pála as ruling prince occurs; he would seem to have been a Buddhist; this must be Deva Pála of the Bengal kings, who it would seem were rulers of the whole country. The name of Kaniska also occurs, as founder of a Vihara (in the north); this Kaniska was the third Tartar prince of that name ruling in Cashmere, who, we are told in the Raja Taringini, restored Buddhism (see Prinsep's Useful Tables). Dr. Ballantyne, Principal of the Benares College, has prepared a careful and elegant translation, which, with a transcript of the original Sanskrit, I send with this letter. The character is an early type of the Goura or Kutila, and very distinct. The inscription is worthy of patient investigation, for there are several doubtful passages, and the pundits are by no means unanimous in their reading.

From Guserawa I went to Uphsur, the spot I paid a hurried visit to last year. I put a number of workmen to clear the earth and rubbish in which the great image of Varáha was buried; I was well

repaid for the expense and labour, for a more curious and interesting piece of sculpture could not well be found. The figure of the goddess Prithee is a fine specimen of art; the group represents Vishnu as the Sweta Varáha, with the holy men escaping the deluge in his bristles, and Prithee raised on his tusk; Schesa appears on his right, half man half snake. On the hog's back is a rock on which is a Schesnág and remains of figures, apparently Maha Deva and Parvati. On the tip of the tongue Buddha is seated. The figure is about nine feet high and as many in length; the stone is a compact sandstone, the same as that of the Asoka pillars, and is one single block; I have taken drawings and made a careful copy of the inscription which had received furthur injury since I saw it last year, and have brought it away to re-examine it, and to restore as much as possible before having it fixed in a pedestal near the Varáha. This inscription is extremely curious, and had it not been for the centre portion being ground out by the sharpening of tools, it would have proved the most useful and interesting relic next to the Asoka inscriptions that we have ever become possessed of; as far as I have transcribed it, the pundit has explaimed the meaning; there are six princes named of the Gupta Dynasty, mostly names new to us and two are to be found in the Raja Taringini. Hushka Deva is one: the writer of the inscription records his having met in battle a large army of Huns whom he defeated, and here the inscription is defaced; allusion is made to the great tank which still exists at the N. E. corner of the village; the Varáha is not mentioned. It was very near this place that the coins which were lately sent to the Society from Monghyr were found. Leaving (Uphsah) and about one mile to the north washed on its western face by the Sikri river, is an isolated rock about $\frac{3}{4}$ of a mile in circumference, or less; on this have been fortifications and several large chaityas, of which there are clear traces; there are several mutilated figures of Buddha of colossal dimensions; there is a small village under the north face; I could glean no tradition concerning this curious place. From hence I proceeded to Tettarawa, where there have been many chaityas and viharas in former times, but of the later periods of Buddhism. There are a great many images scattered about in all directions, one in particular of Buddha, on the site of a chaitya beside a large tank, is of gigantic size and finely executed; a terrace has lately been built under it and behind it; it is worshipped as Bhairab.

I found the people excavating, for bricks they said, but I believe, in search of treasure, or of metal idols. I descended into one excavation and removed a huge block of stone in which there were niches which had evidently contained relics embedded in some ruinous substance that had been partly charred by the fire, which had evidently destroyed the building, for upon removing the stone which was much split I found a chamber filled with ashes, and burnt bones, and I was told that every place exhibited the same marks of destruction. From this village I proceeded to Behar, where I passed several days. The Mahomedans have destroyed every thing, even the stone pillar on which there are inscriptions in the Gupta, as well as Chinese looking characters. These I copied, and the former have been made out as satisfactorily as their mutilated condition will admit of; one is nearly verbatim the same as that of the Bhitarí pillar, translated by Prinsep; the other appears to relate to the victory of Chandra Gupta over the Nandas, but it is very imperfect. Surely these cannot be the same inscriptions sent by Mr. Ravenshaw, and published by Mr. Torrens in the 9th volume, (I think) of the Journal, with an alphabet? You will have an opportunity of comparing notes when my official report and journal is submitted to government. I visited "the little hill" of Fa Hian; on this are numerous tombs of Mussulmans and the massive Mausoleum of Mulik ben Ibraheem, who flourished during the reign of the first Feroz Affghan of Dehli; these tombs are all constructed on the sites of Buddhist buildings no doubt, and with their materials. The citadel of Behar is evidently an unfinished Mahomedan structure and decidedly not Hindu, as conjectured by Buchanan and asserted by the people; the place has been nothing more than what the name implies, viz. a Vihara, or perhaps many Viharas and Chaityas. There are a few very beautiful fragments here and there. From Behar I went to Bargaon; this must have been a famous place, and I consider it to be the "Na lo" of Fa Hian; there are some splendid tanks some half a mile or more in length; there are mounds innumerable and broken idols also, they are all of the later times; some are half Vishnuvite half Buddhist, some are Surrowuc Jain, and some of the Naga type. There are linga and several figures of Durga slaying Mohesh; there is a Jain temple in the village in the same state as those at Pawa Puri, it is to the south of the tanks that there are the greatest masses of ruins; there appears to

have been five large towers or temples, one or more of the mounds should be excavated. They appear to have had chambers vaulted in a very clever though primitive manner, which is termed "Vang," वंग, in the Gussurawa inscription. The bricks are overlapped like an inverted staircase till they meet at a point in the centre.

I observed a chamber that had been lately excavated, from which ashes, charcoal and bones were cleared in large quantities again, showing the place had been destroyed by fire; weapons are occasionally found among the ashes.

From Bargaon I went to Raja Griha; I found nothing new there except the remains of an ancient temple to Maha Deva on the crest of one of the hills, called Abhaigiri; I saw remains of small towers on this hill, but the Jains have appropriated every site and built very indifferent temples on them. I took a bird's eye sketch of the town of Raja Griha; the tower at the western gate has evidently been purposely destroyed and excavated so that to renew the operation would be fruitless. I heard of the ruins of a temple some miles off in one of the recesses of the hills, but the heat prevented my visiting it because I could not go by night through the thick thorny jungle; it is said to have been a brick building. I had been daily suffering from exposure and was too unwell to prolong my tour, so I returned to Gaya, and after fruitless attempts to get the Gayawals to allow me to copy those inscriptions that yet remained to be done, I broke up my camp, first of all arranging for the despatch of my collection of sculptures.

The day before leaving Gaya I went to Buddha Gaya to return the visit paid me by my friend the Mohunt; I here saw the inscribed slab which is used as a door site; it is uninjured and the Mohunt has promised to remove it and send it to me; it is Buddhist and of a later date than that of Gassurawa. I returned to Benares by dwak, and thus ended my first *official* tour as Archæologist for 1848. My next must be to Gorakpur and thence to Patna to explore the many sites of cities in that direction.

I have now given you a tolerable idea of my doings; for more minute particulars you must wait for my official report and drawings.

*Hindí and Urdú Hindí Tazkiras.**

Letter from F. Edward Hall, Esq. to the Senior Secretary, Asiatic Society of Bengal.

Among various works to which I have frequently been desirous of referring, in connection with my Oriental studies, but which I have found our library to be meagrely supplied with, I may mention, in particular, Tazkiras of the Persian, Hindí, and Urdú Hindí poets. These Tazkiras contain biographical notices,—of poets especially,—and selections from their writings. At present I wish to call your attention to those Tazkiras only which have reference to authors that have written in Hindí and Urdú Hindí. The number of works of this description that exists, has not yet been ascertained. M. de Tassy had been able to procure but seven, when he published the first volume of his invaluable "Histoire de la littérature hindoui et hindoustani," in 1839. In his preface he gives the names of two more that had reached Europe, but which he had not been able to avail himself of. These were in the collection of the late Sir William Ouseley. Several others are mentioned in the body of his work. His "Additions" will probably furnish the names of some which I am as yet unacquainted with. In an interesting paper in the January number of the "Nouveau Journal Asiatique" for 1843, M. de Tassy gives some account of the Majmá-u-lintikháb of Sháh Muhammad Kamál, the most voluminous and complete work of its kind that had until then appeared. Capt. Newbold enjoys the credit of having sent the first copy of this work to Europe, and perhaps of being the first European aware of its existence. It was written in 1804-5. Kamál was engaged about twenty years in collecting materials for it, and two more in arranging them. From this compilation the curious discoveries have been made, not only that Sádí wrote in Rekhta, but that a fragment from his pen is the oldest specimen of Urdú Hindí composition extant. Kamál even goes so far as to call Sádí the *inventor of the Rekhta language* (موجد زبان ریختہ). The authority which the compiler of the Majmá-u-lintikháb adduces for these statements, is the poet Qáim, who died about fifty-five years ago.

* For a resolution passed with reference to this communication, see the Proceedings of the Society for April last.

The subjoined list comprises the names of all the Tazkiras of Hindí and Urdú Hindí writers, that I have anywhere seen mentioned. Nos. 4, 22, and 23 are Anthologies. Works of this description are often useful in verifying extracts found in Tazkiras. A small portion only of the first Anthology just referred to, is devoted to the poetry of the vernacular language of Hindústán; and the same may be said of the Tazkira of Abú Tálib. These small portions are, however, valuable.

I am unable at present to say whether No. 11 is a Persian, or a Hindí Urdú Tazkira, or a compound of both; and I am in the same doubt with regard to several others whose names I have not given. A number of these, there are strong reasons to suppose, treat, in good part, of writers of the vulgar tongue.

If encouragement be offered to my present project with reference to Hindí and Urdú Hindí Tazkiras, I may on some future occasion prepare a list of Tazkiras containing memoirs of natives of India that have written in Persian. Nearly all of the Urdú Hindí authors of celebrity, and very many of inferior rank, have written more or less in the language of Háfiz and Firdausí. Works of the class just meutioned must, consequeutly, in so far as they treat of Indian writers, possess almost equal importance with Hindí and Urdú Hindí Tazkiras, strictly so called. Biographies of this description are very numerous. A formidable list might be culled from Mr. Bland's searching article on the lives of the Persian poets, published last year in the Journal of the Royal Asiatic Society.

1. Tazkira-i Shuará-e Hindí, by Ghulám-i Hamdání Mushafí.
2. Tazkira-i Shuará-e Hindí, by Fath Alí Khán Husainí Gurdaizí.*
3. Gulzár-i Ibráhím, by Nawwáb Alí Ibráhím Kháu.
4. Guldasta-i Nashát, by Mannú Lál Láhorí.
5. Díwán-i Jahán, by Bení Náráyan† Jahán Láhorí.
6. Nikát-u-shshuará, by Mír Muhammad Taqí.
7. Gulshan-i Hiud, by Mirzá Alí Lutf.

* In the older of the two MSS. of this Tazkira that once belonged to the library of the College of Fort William, which is now in my possession, I find گرویذ or گرویذ instead of گردیذ. But I find no such place on the maps.

† This is the orthography which this writer uses in his Chahár Gulshan, in preference to the vulgar corruption, Naráyan.

8. Majmą-u-lintikháb, by Sháh Muhammad Kamál.
9. Gulshan-i Be-khár, by Nawwáb Mustafá Khán Bahádur Shefta.
10. Khulásat-u-lafkár, by Mirzá Abú Tálib Khán.
11. Tazkira-i Shuará-e Jahángír Sháhí.
12. Tazkira, by Maulaví Qudrat-u-lláh.
13. Tazkira, by Miyán Muhammad Qáim.
14. Tazkira, by Mír Muhammad Alí Tarmazí.
15. Tazkira, by Ghulám-i Husain Shorish.
16. Tazkira, by Mír Ghulám-i Hasan.
17. Tazkira, by Mír Fakhr-u-ddín.
18. Tazkira, by Abú-l-Hasan.
19. Tazkira, by Mirzá Jawán Bakht Jahándár Sháh.
20. Tazkira, by Imám Bakhsh Khán.
21. Tabkát-i Shuará-e Hind, by Maulaví Karím-u-ddín.
22. Guldasta-i Náznínán, by the same.
23. Intikháb-i Dawáwín, by Maulaví Imám Bakhsh Sahbái.*

Of these works we have the first five only in our library. Five of the twenty-three have been printed, Nos. 4, 9, 21, 22, and 23,—the first in this city, and the rest at Dihlí.

The importance of securing as many of these works as possible, without delay, must be obvious to all that are aware of the growing indifference of Musalmáns to perpetuate manuscript writings of other than the very highest importance. Large additions might without doubt be made to M. de Tassy's biographical memoirs, from materials which it is in the power of this Society to collect at a trifling expense. If the Society should see fit to listen favourably to a proposition to this effect, I would cheerfully do everything in my power towards promoting it, by making the requisite investigations. The expense of copying those works of the list above given, which are not in the library, and which there is any ground for expecting to find at present, would not probably exceed two hundred rúpís, and might fall much short of that amount.

* This author has, I believe, compiled a Tazkira, in addition to the Anthology above mentioned.

It is a curious fact that No. 21 is little more than a translation of the 1st vol. of M. de Tassy's "Histoire." I have not yet had time fully to ascertain its merits.

For information with regard to the last three works of my list, I am indebted to the ready kindness of F. Taylor, Esq., Officiating Principal of the Dihlí College.

Ethnography and Geography of the Sub-Himalayas.

Extract of a letter from B. H. Hodgson, Esq. to Capt. Cunningham, Tibet Mission.

I have now the pleasure to send you the specimen of the Khas language of the eastern Sub-Himalayas, from the Kali to the Tishta. It is, you see, a strangely mongrel tongue in these parts, and I suspect it is not less, but more, so in the western parts, or where you are. There are nevertheless traces of a primitive speech, though the present list of words,—a bad one, by the way—shows them ill. But it must be confessed that (me judice) *no* summary vocabulary *can* exhibit an adequate sample of any language whatever as to whose vocables there be room for doubts looking to proximate tongues. I prefer therefore in such investigations the ample style of research which my Essay on the Kóch, Bódó and Dhimál exhibits, and which I am preparing to send you a copy of, so soon as I can get one duly corrected, for the errors of the press are very many. But, though that be the true model, yet I suspect it will prove too weighty for general adoption, and therefore I am anxious that the more summary one sent you already, and which has now been applied to some 40 tongues, should meet with favour and be the means of enabling us to make a general comparisou of all the Aborigines from Cape Comorin to the snows. I have sent copies to Newbold, Elliot of Madras, Jenkins of Assam, Ouseley, Sleeman, your namesake of Bhopál, &c. &c. And I have already got a few and am promised more filliugs-up from the several aboriginal tongues withiu reach of my numerous correspondents. I hope you will not be behind hand but send me the Garhwali and upper Kanáveri, aud any other dialects of your parts which are not of Sanscrit origin, whether the people speakiug them dwell towards the suows, like the Garhwális, or towards the plains, like the Thárús and Boksars, or midway, like the Helots (Doms) of Kumaon. All and any such (which are clearly not Prákrits, or of the Indo-Germanic stock) will be welcome to me. I have now residing with me Doctor Hooker, an accomplished Botanist and master also of all the other branches of science at all allied to, or calculated to throw light on Botany. He will stay with me for the next 6 months. He is much taken with my skeleton of the physical geo-

graphy of Tibet and the Himálayan region, and he and I want you and other friends in the Norwest, to let us know what you think of this skeleton, and to help us to amend and fill it up before we commence a serious project we have on the tapis, viz. disposing all the plants and animals according to their territorial arrangement, and thus demonstrating its utility and value. Here is the outline:—

Lengthwise division of the Sub-Himálayas into basins—

1. Alpine basin of the Indus.
2. Alpine basin of the Ganges.
3. Alpine basin of the Karnáli.
4. Alpine basin of the Gandak.
5. Alpine basin of the Kósi.
6. Alpine basin of the Tishta.
7. Alpine basin of the Dihong.

I suppose this series of basins to be formed by the pre-eminent snowy peaks, and I have perfect proof that such is the fact in Nepal, where Dhoulagiri, Gosainthán and Kanchan form most precise deltizers of the very perfect deltic basins of that part of the mountains. I cannot however so well find deltizing peaks W. and E. of Nepal. I want you to help me in that search, and also to say if you think practical utility would be forwarded by additional basins? and if the physiognomy of the western hills requires or sanctions a separation of the basins of the Sutlege from the Indus, or of the Jamna from the Ganges? Remember however always that though it be interesting to show the *cause* of the series of Sub-Himálayan basins, yet the series may be good though the cause be bad. Therefore look for causative snowy peaks, but don't reject the deltic basins because you find them not, or not all of them, or even some peaks that seem to conflict with the theory. Next we have the transverse or breadthwise division of the Sub-Himálayas into the following series, primarily triple, but in whole quinary, thus:—

Breadthwise climatic division—

		Miles.
1.	Northern region, or Cachár, ...	30
2.	Central region,.....	30
3.	Lower region, ... { Subdivided into Lower hills, ... 1—10; Forest, ... 2—10; Tarai, ... 3—10 }	30

Extent,.....		*Elevation.*
1. 30 miles,	Crest of snows to	16 to 10,000 above sea.
2. 30 miles,	verge of true	10 to 3000 above sea.
3. 30 miles,	plains.	3000 to 1000* above sea.

Subdivisions of 3, each 10 miles in extent.

Such is the scheme for giving a convenient nomenclature to the topography of these mountains, based on their true physiognomy and climate. A better judge of its apparent value could not be than Dr. Hooker, and he feels as much confidence as I do, after much examination of maps compared with the results of my personal knowledge, that the apparent and the real values will prove, in this case, one. So that nomenclative convenience will go hand in hand with a solid and considerable accession to physical Geography.

And now my feeble state, the consequence of a severe attack of illness, warns me to pause for the present, though your very interesting letter tempts me to dilate on some of the numerous topics thereof. I can only say at present that I congratulate you on your discoveries.

NOTE.—The Khas are undoubtedly one of the aboriginal tribes of these mountains, however much the traces of their origin may be obscured by intermixture with the Arian Hindus. And accordingly we find the Khas, like the Kiráutis, mentioned in the Puráus and in classical authors as barbarian tenants of the Sub-Himalayas. The Khas, however, welcomed the Hindu immigrants into these mountains at a very early period, and soon became so intermixed with the Bráhmanical and Kshatriya tribes (the genuine Arians) that all physical or linguual traces of their aboriginal lineage are now much weakened or obliterated. And as they have become, since the predominance of the Gorkhali dynasty in Nepal, the dominant race in a Hindu kingdom, they are themselves very anxious that those few traces should remain unnoticed. But no one practised in Ethuological researches can fail to discern the aboriginal and Mongolian origiu of the Khas in their forms and faces: nor does their language, how much Prákritized soever want some vestiges of that origin, though the following list of words is not happy in the exhibition of them. All Khas gentlemen iu Nepal parade a Rajpút origiu, and it is no doubt true that by the father's side very

* Assumed plain level. But it varies from 1200 to 250 between N. W. and S. E. extremes. We must take the plain level and correct for it. The elevations, as limits, of course refer to organic life in Zoology and Botany.

many of them are descended from Bráhmans or Kshatriyas of the plains. But their mixed lineage is undoubted, and it is therefore the more remarkable that the rank and privileges of the 2d order of Hinduism have been conceded to them under a strict Hindu regime—a striking proof that Bráhmanism is not the unalterable institute which some Europeans of note have represented it to be. Capt. C. supposes he has discovered many traces of the aboriginal Khas in the Nor-west.

KHAS LANGUAGE.

Arrow,	Kánd,		Leaf,	Pát,	H.
Bird,	Chara,	*H.	Light,	Jóti,	S.
Blood,	Rakat,	S.	Lightning,	Bajar,	S.
Boat,	Dúngá,		Man,	Mánis, Lógnya,	
Brass,	Pítal,	H.	Milk,	Dúdo,	H.
Brick,	Ínth,	H.	Moon,	Chánd, Jún,	
Brother,	Dájú, elder,	B.	Mother,	Amma,	
Buffalo,	Bhainsa,	H.	Mountain,	Dánda,	
Camel,	Únth,	H.	Mouth,	Múkh,	H.
Cat,	Biráló,		Name,	Náon,	H.
Cloud,	Mégh,	S.	Night,	Rátí,	H.
Copper,	Támbó,	H.	Nose,	Náka,	H.
Cotton,	Kapás,	H.	Oil,	Tél,	H.
Cow,	Gai,	H.	Rain,	Barkhá,	S.
Daughter,	Chóri		River,	Khóla,	
Day,	Din,	H.	Road,	Bátó,	
Dog,	Kúkar,		Salt,	Núu,	H.
Ear,	Kán,	H.	Sheep,	Bhérá,	H.
Earth,	Prithivi, Máti,	S. H.	Shoe,	Panai,	
Elephant,	Háthi,	H.	Silver,	Chándi,	H.
Eye,	Ánkha	H.	Sister,	Bahini, Didai,	
Father,	Bábá,		Sky,	Sarg,	S.
Fire,	Ágó,	H.	Son,	Chórá,	
Fish,	Máchha,	H.	Snake,	Sáp,	S. H.
Flower,	Phúl,	H.	Snow,	Hyún,	S. H.
Foot,	Górá,	H.	Star,	Tárá,	H.
Fort,	Garh,	H.	Stone,	Dhúngá,	
Fruit,	Phal,		Sun,	Súraj,	H.
Goat,	Bóká, (mas.)		Thunder,	Garan gúran,	
Gold,	Sún,	H.	Tiger,	Bág,	H.
Grass,	Ghás,	H.	Tooth,	Dánt,	H.
Hair,	Raon,		Town,	Sahar, Pers.	
Hand,	Háth,	H.	Tree,	Rúkh,	
Head,	Tau, Tou, Tou ko,		Tribe,	Thar,	
Honey,	Moho,		Village,	Gaon,	H.
Horse,	Ghóra,	H.	Water,	Páni,	H.
House,	Ghar,	H.	Wife,	Jóï,	
Husband,	Póï,		Wind,	Batás,	H.
Iron,	Phalám,		Woman,	Swásni,	
King,	Rájah,	H.	Wood,	Káth,	S.
Lead,	Sísá,	H.	Wool,	Raon,	

* Note.—H. postfixed indicates a Hindi or Urdu origin, S. a Sanscrit one.

North,	Uttar,	S. H.	Square,	Chár pátya,	
South,	Dakhin,		Straight,	Sojó,	
East,	Púrba,		Sweet,	Mithó,	H.
West,	Paschim,		Then,	Tailé,	
1.	Ek,		There,	Utá,	
2.	Dwi,	S.	Thick,	Mótó,	H.
3.	Tin,		Thin,	Dúbló,	H.
4.	Chár,		Wet,	Bhíjyo, Chísó,	
5.	Pánch,		When,	Jailé,	
6.	Chah,		Red,	Ráto,	S.
7.	Sát,		Yellow,	Pahelo,	H.
8.	Áth,		Blue,	Niló,	S.
9.	Nou,	H.	Green,	Haryo,	H.
10.	Das,		Black,	Káló,	H.
11.	Egáro,		White,	Shétó,	S.
12.	Bárah,		Right,	Dainé,	H.
20.	Bis,		Left,	Dévré	
30.	Tís,		I,	Man,	H.
40.	Chálís,		Of me,	Méró,	
50.	Pachás,		To me,	Ma lai,	
100.	Sai,		Me,	Ma lai,	
1000.	Hajár,	Pers.	By me,	Mai lé,	
1st.	Pahila,		We,	Hámi hérú,	
2nd.	Dúsrá,		Of us,	Hami hérú ko,	
3rd.	Tísra,	H.	To us,	Hami* hérú lai,	
4th.	Choutha,		Us,	Hámi lai,	
10th.	Dasón,		By us,	Hámi* lé,	
After,	Pachi,	H.	Thou,	Ton Tan,	H.
Bad,	Naniko, Ghin lágdo,		Of thee,	Téró,	
Before,	Aghi,	H.	To thee,	Ton lai,	
Beneath,	Tala, Múni,		Thee,	Ton lai,	
Broad,	Choura,	H.	By thee,	Tain lé,	
Cold,	Chísó,		Ye,	Timi herú,	
Crooked,	Bángó,		Of you,	Timi hérú ko,	
Dry,	Súkyo,	H.	To you,	Timi hérú lai,	
Good,	Niko,		You,	Timi hérú lai,	
Hard,	Sáró,		By you,	Timi hérú lé,	
Heavy,	Garúng,		He,	Ú,	H.
Here,	Itá,		Of him,	Úskó,	
High,	Algo,		To him,	Úslai,	
Hot,	Tato,		Him,	Úslai,	
Large,	Thúló,		By him,	Úslé,	
Light,	Halúng,		They,	Úni herú,	
Long,	Lámo,	H.	Those,	Tini hérú,	
New,	Naya,	H.	Of them,	Úni hérú ko,	
Now,	Ailé,		To them,	Uni hérú lai,	
Old,	Púrán,	H.	Them,	Uni hérú lai,	
Quick,	Chándohinya, Chito,		By them,	Uni hérú lé,	
Raw,	Káchó,	H.	Who,	Jún, Jó,	H.
Ripe,	Pákó,	H.	Of whom,	Jas ko,	
Rough,	Khasro,		To whom,	Jas lai,	
Round,	Dallo,		By whom,	Jas lé,	
Slow,	Dhílo,	H.	What,	Jyá,	
Small,	Sánú,		Of what,	Jyá ko,	
Smooth,	Masino,† Chillo,		To what,	Jya lai,	
Soft,	Kawala,		By what,	Jyá lé,	

* Pluralizing sign hérú omissible.
† Corruption of Mahín.

This,	Yó,	H.	To Hear,	Súnnú,	H.
Of this,	Yés ko,		,, Eat,	Kháúú,	H.
To this,	Yés lai,		,, Carry away,	Léjánú,	H.
By this,	Yés lé,		,, Raise,	Uchalnú,	
That,	Tyó,		,, Cook,	Pakounú,	H.
To speak,	Kúra garnú,		,, Open,	Ughárnú,	H.
,, Bring,	Lé ánú,	H.	,, Weigh,	Jókhnú,	H.
,, Die,	Marnú,	H.	,, Bind,	Bándhnú,	H.
,, See,	Hérnú,		,, Cut,	Kátinú,	H.
,, Drink,	Pyúnú,	H.	,, Tear,	Chyátnú,	
,, Sit,	Bósnú,	H.	,, Wipe,	Póchhnú,	H.
,, Give,	Dinú,	H.	,, Call,	Dáknú,	
,, Be,	Honú,	H.	,, Blow,	Phúknú,	H.
,, Come,	Aunú,	H.	,, Fall,	Khasnú,	
,, Go,	Jánú,	H.	,, Make,	Banounú,	H.
,, Stand,	Ubhinú,		,, Clean,	Májhnú,	H.

Meteorological Summary for 1847, *by Capt.* H. L. Thuillier, *Dep. Surveyor General.*

Months.	Monthly Mean Temperature Fahrenheit.				Atmospheric Variations.			Rain Gauge.		Remarks.
	At Sunrise.	At 2h. 40m.	At Sunset.	Extreme Monthly difference at 2·40 compared with 1846.	Maximum Pressure in Inches.	Minimum Pressure in Inches.	Extreme Monthly diffrence of Maximum Pressure compared with 1846.	Rain in Inches.	Extreme Monthly difference compared with 1846.	
	°	°	°	°						
January, ...	61·0	77·9	73·1	—1·5	30·026	29·907	—.113	0.00	—0.82	
February,.....	61·6	80·5	33·7	+0·4	·038	·916	—.040	0.00	—1.80	
Mareh,.....	71·9	93·2	85·0	+0·6	29·942	·806	+.020	0.00	—2.30	
April, ...	77·7	92·6	85·5	—3·6	·811	·682	—.016	2.33	+1.76	
May, ...	80·0	93·0	85·3	—0·7	·703	·587	—.023	4.79	+2.30	
June, ...	80·8	89·3	84·8	+0·9	·585	·494	—.041	12.01	—0.13	
July, ...	80·2	87·7	83·2	+0·4	·591	·500	—.016	15.69	—4.38	
August, ...	80·5	87·4	84·0	+0·2	·630	·533	+.027	15.09	+1.83	
September,.....	80·2	87·2	84·0	+0·7	·704	·598	+.028	10.95	+0.98	
October,.....	76·0	86·8	82·8	+2·5	·920	·809	+.071	5.86	—4.90	
November,.....	76·8	81·6	77·5	—1·8	30·008	·892	—.003	5.59	+4.85	
December, ...	60·1	76·4	72·8	+0·4	·047	931	—.035	0.05	—1.47	
Mean,	73·9	86·1	77·6	— ·9	29·833	29·638	—.012	6.03	—.34	

For 1847.

The greatest height of Barometer on 5th Feb. at 9h. 50m.	30.169
Least ditto on 25th May, at Sunset,.....	29.310
The greaest height of Thermometer on 26th May, 2h. 40m.	105°.
Ditto ditto by Maximum Thermometer, ...	109°.6
The least ditto 1st February Sunset,.....	50°.0
The hottest month May average Temperature,.....	88°.78
Coldest, December ditto, ...	71°.6
Total fall of Rain, ... Inches,	76.44

For 1846.

12th January, 9h. 50m.	30.225
25th July, 4 P. M.	29.356
9th May, 2h. 40m.	103°
Ditto, ...	105°
21st January at Sunrise, ...	55°
April, average Temperature,.....	90°.53
December, ...	71°.55
Inches,....	72.36

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL,

For June, 1848.

At a Meeting of the Asiatic Society held at the Town Hall, Calcutta, on the evening of Wednesday, 7th June, 1848.

J. W. Colvile, Esq, President, in the Chair,

The proceedings of the last meeting were read.

The monthly accounts and vouchers were laid upon the table.

The following gentlemen, having been duly proposed and seconded at the preceding meeting, were balloted for and elected members of the Society:—

J. Strachey, Esq. C. S.

Geo. Massey, Esq.

Lieut. Albert Austen, H. A.

Wm. Taylor, Esq. C. S.

The names of the following gentlemen were submitted for election at the next meeting:

Dr. J. McLelland, proposed by Mr. J. W. Laidlay, seconded by Dr. Walker.

Lieut. John Harley Maxwell, Bengal Engineers, proposed by Dr. Falconer, seconded by Mr. Laidlay.

Read letters from the following gentlemen withdrawing their names. from the list of members: Rustomjee Cowasjee, Esq., Manickjee Cowasjee, Esq. and Babu Nripendranáth Thakur.

Read a letter from W. Seton Karr, Esq. Under Secretary to the Govt. of Bengal, transmitting copy of a letter from the Secretary at the India House, with enclosure from the Prussian Consul General, announcing the shipment of a box of books presented to the Society.

No. 592.

From the Under Secretary to the Government of Bengal, to the Secretary to the Asiatic Society,

Dated Fort William, the 10th May, 1848.

SIR,—I am directed to transmit for the information of the Asiatic Society the accompanying copy of a letter from the Secretary at the India House, dated the 21st March last, and of its enclosure, from the Prussian Consul General, reporting the shipment per "Mary Anne" of a box of Books addressed to the Vice President and Secretary to the Asiatic Society of Bengal.

2. The Superintendent of Marine has been desired to land and forward to you the box of Books above referred to.

I have, &c.

A. SETON KARR,

Under Secy. to the Govt. of Bengal.

Public Department.

East India House, London, 21st March, 1848.

SIR,—I am commanded by the Court of Directors of the East India Company to transmit you a bill of lading for the Shipment per "Mary Anne" of a box of books addressed to the Vice President and Secretary of the Asiatic Society of Bengal, Calcutta, which the Court have undertaken to forward in compliance with the request contained in a letterfrom B. Hebeler, Esq. the Prussian Consul General, dated 23d September, 1847, of which a copy is enclosed.

All charges in respect of the box have been defrayed, and it is to be delivered as addressed, *free of expense.*

I have the honor to be, &c.

(Signed) JAMES C. MELVILL, *Secy.*

To the Chief Secretary for the time being at Fort William, in Bengal.

Royal Prussian General Consulate, London, (106 *Fenchurch Street*),

23d September, 1847.

SIR,—I have the honor to transmit you the accompanying letter received by me from His Excellency Mr. Eichhorn, His Prussian Majesty's Minister for Public Instruction, addressed by Dr. Pertz, Principal Librarian of the Royal Library at Berlin, to the Vice President and Secretary of the Asiatic Society of Bengal, in Calcutta, and with reference to its contents, I beg to announce the arrival in this port of a case with the sundry valuable works presented to that learned Society.

Awaiting your obliging instructions regarding the transmission of this present to the Royal Asiatic Society in Calcutta,

I have, &c.

(Signed) B. Hebeler,
Prussian Consul General.

J. C. Melvill, Esq. (True Copies)
&c. &c. &c. W. Seton Karr,
East India House. *Under Secy. to the Govt. of Bengal.*

Resolved, that the marked thanks of the Society be returned to the Prussian Government, through the same channel, for this very valuable donation.

From the Secretary to the Superintendent of Marine, forwarding the case of books referred to. *(See Library report.)*

From the same, forwarding copies of letters from Major Jenkins and Mr. Thornton, on the coal formations of Assam, with a map of the road from Nazecrah to the coal beds on the Nainsing Naga hills. —(Ordered for publication in the Journal.)

From W. Seton Karr, Esq. Under Secretary to the Government of Bengal, transmitting papers from the Commissioner of Assam relating to some ancient remains of temples in the vicinity of Suddyah, recently visited by Major Hannay.

From Capt. Thuillier, forwarding a Meteorological Summary showing the mean temperature and pressure, and the fall of rain in each month of 1847, and a comparison of the most remarkable atmospheric phenomena during that year and 1846.

From Brigadier Stacy, Meerut, forwarding a drawing by Ensign Anley, of a remarkable insect. (Referred for examination to Mr. Frith.)

From the Rev. W. Keane, giving an account of the process of cure followed by a snake-catcher when wounded by a Cobra, and forwarding for inspection the substance employed.

The substance is evidently nothing but a fragment of charred bone.

From E. S. Brandreth, Esq. enclosing a fac simile of an inscription on the wall of a Jain Temple near Ajmere. The inscription is in Arabic, in Kufic characters, and of no historical importance.

في تولية ابوبكر بن احمد

خالو الهروي بتاريخ ذالحجه سنه ستة و ستين وستمائه

"Under the administration of Abubekr bin Ahmad, Khalu-l-haroví, in the month of Zilhija, and in the year 666."

MY DEAR SIR,—I have the pleasure to enclose the fac-simile of an inscription on the wall of a Jyn temple near Ajmeer. I thought on looking at the writing from below from its position inside the temple itself, that it might throw some light on the early history of the temple, but it appears to be in the Persian language, though no one here understands the character in which it is written, and was probably added by the Mahometans when they converted it into a place of worship for their God. A drawing and description of the temple is given in Tod's history of Rajpootana, but the author does not give any account of its origin, and did not apparently observe the inscription. He makes allusion to what he believed to be Sanskrit letters on the arch in front of the temple, but with the aid of a ladder, I made an examination of the suspicious appearances and found them to be merely ornaments in the sculpture. Among the sacred records in the possession of the Sireepooj of the Suranngees, I find it stated that the "prutishta," consecration of the temple, took place in S. 717, in the time of the gooroo Padmchund Chutyara, and that it was built by a Suranngee merchant named Beerundas Kala, who spent seven lacs of rupees in its construction. Ala-u-din converted it into a Mahometan place of worship; he took out all the larger images and buried them in the ground, he defaced all the smaller ones that were sculptured on the pillars, and finally built seven magnificent arches in front of the temple. Since his time it has been called the "Arhai din ka jhompra," though for what reason more creditable than that it was built in two days and a half, I could never learn. During the last three or four years several of the images buried by Ala-u-diu have been dug up. I suppose you will be able to decipher the inscription in Calcutta, and will then learn whether it possesses any interest.

Your's truly,

E. S. BRANDRETH.

Ajmeer, May 16, 1848.

From J. Strachey, Esq. forwarding the last sheets of his brother, Lieut. Strachey's, Journal of his travels in Tibet.

Also a letter from Mr. Batten on the same subject.

From Capt. Cunningham, forwarding a continuation of his verification of the route of the Chinese Pilgrim Hwan Thsang through Afghanistan and India, during the first half of the 7th century.

Also a memorandum by the same on proposed Archæological Inves-

tigations. (Published under the Miscellaneous head in the present number.)

The ordinary business of the evening having been disposed of, the Second Report of the Section of Natural History upon Mr. Blyth's application for an increase of salary and a retiring pension, was then read, together with the following resolutions of the Council upon the subject.

Council of the Asiatic Society.

Section of Natural History, 7th June, 1848.

The Council of the Asiatic Society submit a report from the Section of Natural History on Mr. Blyth's reply to the former Report made by the Section on Mr. Blyth's application for an increase of salary and a retiring pension.

The Council having perused with extreme care the whole of the statements made by Mr. Blyth on the one hand and the Section of Natural History on the other—deem it now their duty to propose,

1st.—That the Report now made by the Section of Natural History be received, read and laid upon the table.

2d.—That the Society must decline to forward or support the application of Mr. Blyth to the Court of Directors for an increase of salary or a retiring pension.

3d.—That the Society cannot acquit the Curator of serious neglect of duty in permitting the collections of shells, fossils and insects, to fall into the state of dilapidation and decay in which the same are now found to be.

4th.—That the Section of Natural History be requested to adopt measures for the restoration and re-arrangement of these collections.

5th.—That the documents laid before the Council during this enquiry and by them submitted to general meetings, be printed in a separate shape and circulated to the members generally.

6th.—That the thanks of the Society be voted to the Section of Natural History for the service they have rendered to the Society by their investigation of and reports upon the manner in which the duties of the Zoological Curator have been discharged.

W. B. O'Shaughnessy, *Secy.*

The first of these resolutions was adopted by the meeting. On the second being put from the chair, Mr. Newmarch proposed as an amendment,

That the report now received and read, together with the minutes of reference to the Zoological Section and their original report thereon,

and Mr. Blyth's reply, be printed and circulated to the members of the Society, and that the questions thereby raised be reserved for consideration at the next monthly meeting.

The amendment being put and carried, the meeting adjourned.

Certified to be a true Report,

JAMES WM. COLVILE *President.*
J. W. LAIDLAY, *Sec.*

LIBRARY.

The following books have been received since the last meeting:—

Presented.

Rgya Teh'er Rol Pa, ou Développement des Jeux, contenant l'Histoire du Bouddha Cakya-Mouni, traduit sur la version Tibétaine du Bkah Hgyour, et revu sur l'original Sanscrit par PH. Ed. Foucaux. Premiere Partie.—Texte Tibétan.—BY THE EDITOR.

Verzeichniss der Chinesischen und Mandschu-Tungusischen Bücher und Handschriften der Königlichen Bibliothek zu Berlin. Von Dr. Wilhelm Schott.—BY THE ROYAL ACADEMY OF BERLIN.

Lucernæ veterum Sepulchrales Iconicæ, ex Cavernis Romæ subterraneis collectæ et editæ a Petro Sancti Bartoli, cum observationibus J. Petri Bellorii. —BY THE SAME.

Hán Tsú Sy y Poú, ou Supplement au Dictionnaire Chinois—Latin du P. Basile de Glemona. Publié par Jules Klaproth.—BY THE SAME.

Chrestomathie Mandchou, ou Recueil de Textes Mandchou, destiné aux Personnes qui veulent s'occuper de l'etude de cette langue; par M. Jules Klaproth.—BY THE SAME.

Uber Inhalt und Vortrag, Entstehung und Schicksale des Königlichen Buchs, eines Werks von der Regierungskunst, als Ankündigung einer Uebersetzung nebst Probe aus dem Türkisch-Persisch-Arabischen des Waassi Aly Dschelebi von Heinrich F. von Diez.—BY THE SAME.

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Index Librorum Manuscriptorum et Impressorum quibus Bibliotheca Regia Berolinensis aucta est anno 1835 to 1839, 4 vols.—BY THE SAME.

Numismatum Modernorum Cimeliarchii Regio-Electoralis Brandenburgici Sectio Prima, continens Numismata Pontificum Romanorum, Aliorumque Ecclesiasticorum Rariora et Elegantiora; Ære expressa et Dialogo illustrata à Laurentio Begero.—BY THE SAME.

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Entwürfe und Studien eines Niederländischen Meisters aus dem XV. Jahrhundert.

Corpus Inscriptionum Græcarum, 3 vols.—By the same.

Aristoteles Latine Interpretibus Variis.—By the same.

Sehoha in Aristolelem, collegit Christianus Augustus Brandis.—By the same.

Abhandlungen der Königliehen Akademie der Wissenschaften zu Berlin, Annis 1822 to 1844, 27 Vols.—By the same.

Annales des Seienees Physiques et Naturelles, d'Agriculture, et d'Industrie. Tome IX.—By the Socie'te' Royale d'Agriculture, Paris.

Upadeshaka, No. 17.—By the Editor.

The Calcutta Christian Observer, Nos. 192-3.—By the Editors.

The Oriental Baptist, No. 18.—By the Editor.

Transaetions of the Zoological Society of London, Vol. III. part IV.—By the Zoological Society of London.

Reports of the Counеil and Auditors of the Zoologieal Society of London for the year 1847.—By the same.

A List of the Fellows and Honorary Foreign and Corresponding members of the Zoological Society of London 1847.—By the same.

Moore's Indian Appeal Cases, Vol. III. part II.—By the Editor.

Journal of the Indian Archepelago, Vol. II. No. IV.—By the Editor.

Journal of the Royal Geographical Society of London, Vol. VII. part II.—By the Society.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the month of April, 1848.—By the Officiating Deputy Surveyor General.

Nityadharmanurangicá, Nos. 58-9.—By the Editor.

Tatwabodhini Patricá, No. 57.—By the Tatwobodhini Sabha.

Molárehul Azkiá Ohaddiatul Ahabba.—By Mouluvi Reza Hossun Khan.

Exchanged.

The London, Edinburgh and Dublin Philosophical Magazine, Nos. 213-14

Journal Asiatique, Nos. 48 to 51.

The Quarterly Journal of the Geological Society of London, No. 13.

The Athenæum, Nos. 1058 and 1061 to 64.

Purchased.

Comptes Rendus Hebdomédaires des Séances de l'Académie des Sciences, Tom. XXV. No. 26.

The North British Review, No. XVI.

The Annals and Magazine of Natural History, Nos. 2-3, N. S. V.

Journal des Savants for Dec. 1841.

Fauna Antiqua Sivalensis,—being the Fossil Zoology of the Sewalik Hills. By Dr. H. Falconer, and Capt. P. S. Cautley, Parts II. to VI. (three copies).

The Edinburgh Review, No. 176.

Report of the Curator, Museum Economic Geology, for the Month of May.

We have very little in the way of contributions to announce for this month, and the closing of the Museum, with all the inconveniencies necessarily attendant thereupon, have confined me to the laboratory, in which however my work is not far enough advanced for report.

In despatching for Major Jenkins a box of his Assam serpentines which were at his request exhibited at the Society's meeting, I have added also, as requested by him (and as an instalment only of the large debt we owe to so liberal a contributor) eight specimens of various Indian minerals, &c.

From Mr. C. McLeod, we have received a collection of sundry minerals with a few fossils.

I have some other contributions on hand but cannot yet report upon them.

Reports of Curator, Zoological Department.

For March Meeting, 1848.

The following Donations have been received.

1. Walter Elliot, Esq. Madras C. S. A living specimen of the Cheeta, (or Hunting Leopard,) *Felis jubata:* a species, remarks Mr. Elliot, which is "common, though not plentiful, throughout Southern India, and which I have myself met with in the wild state, though I have never actually killed one.* This one is quite tame, and may be handled with perfect freedom. I let him loose in my stables, and he plays about with the dogs and suffers himself to be tied up again without difficulty."†

2. Mr. H. Greenfield, Akra farm. A very fine adult male of the common Bengal Otter, *Lutra chinensis et indica*, Gray, as now identified by that systematist,—*L. tarayensis*, Hodgson.

3. Capt. Phayre, Maulmein. A specimen in spirit of *Sciurus Barbei*, nobis, XVI, 875: and two skins of *Rhizomys sumatrensis*, (Raffles, v. *cinereus*, M'Clelland), adult and young, sent in weak spirit and the hair coming off with the cuticle, so that the skulls only have been retained for the museum.

4. Baboo Rajendro Mullick. A dead Tragopan (*Satyra cornuta*), young male.

5. Mr. E. Lindstedt. A dead white-handed Gibbon (*Hylobates lar*), from Malacca. This animal had been living for some months on the Society's premises; and the contrast which it offered with *H. hoolock*, was very remarkable. The body is proportionally much shorter; and it was quite incapable of walking in the erect attitude commonly assumed by *H. hoolock*, always creeping forward when on the ground in a crouching position. Both skin and skeleten have been preserved.

6. J. Pybus, Esq. Carcass of a Bear (*Ursus labiatus*); now mounted in the museum.

7. Mr. Robt. J. Rose, of the Police. A small *Crocodilus biporcatus*, 6 ft. long, taken out of the Wellington tank, Calcutta.

8. Major Brodie, 5th N. I. Two fine Buffalo skulls, with large horns; from Assam.

9. Robt. Ince, Esq., Chittagong. A few insects in spirit.

10. F. Skipwith, Esq., C. S., Chittagong. Two bird-skins.

11. Mr. Birch, of the Pilot service. A few common fresh-water shells from the Soonderbuns.

12. Mr. Templeton, of the museum. Skin of *Cuculus innotatus*, juv.; Australia.

E. Blyth.

For April Meeting, 1848.

1. Rája Buddenath Roy. A dead female Cassowary, now mounted in the museum.

2. G. T. Lushington, Esq., C. S., Almorah. Two fine skins of the Goral.

3. Mr. J. Bell, of the Preventive Service. A brown variety of the Black Rat (*Mus rattus*, L.); dead.

* Since writing the note to Vol. XVI, 1272, I have learned from Dr. R. Templeton, that the Leopard, and not *F. jubata*, is the so called "Tiger" of Ceylon.

† Mr. Elliot adds—"I had three kittens of *Felis rubiginosa* for you, but unluckily they all died. With reference to your Report in the March Journal (p. 247 ante), I may remark on the subject of Cats that I recently met with an undoubted hybrid between *F. chaus* and the domestic Cat. The Lynx-like tail, the bars on the thighs, the patches of true chaus colour and fur, with the more variegated colour and white pelage of the domestic kind, were distinct and patent to the most careless observer."

4. Baboo Rajendro Mullick. Two dead Pheasants.
5. Jas. J. Davidson, Esq. A misformed egg of the common fowl, kidney-shaped: though small, it was probably double-yolked.
6. Baboo Janmejaya Mittra. A coal black Jackal, young, (but about full grown,) female, dead. Now stuffed in the museum.
7. W. Thompson, Esq. Ballygunge. Frontlet and horns of the European Roe-buck; and skin of a Tern (*Anous tenuirostris*), procured off Madeira!
8. Willis Earle, Esq. A few fishes and sea snakes, procured at the Sandheads.
9. Major Jenkins, Gowhatti. Some skins of Ducks.
10. Mr. A. Bruce, Chittagong. Skin of an Oyster-catcher (*Hæmatopus ostralegus*).
11. J. M'Clelland, Esq., Bengal Medical service. Carcass of a Wanderoo Monkey (*Innus silenus*).
12. Capt. Berdmore, Madras Artillery, (through Capt. Phayre,) Maulmein. A living *Paradoxurus*, apparently undescribed; since dead and preserved in the museum. Dr. Helfer procured the same species in the Tenasserim provinces, and Capt. Phayre in Arracan, where it is rare.
13. Murray Gladstone, Esq. A few Darjeeling birds, much injured; but among them is a new *Heteromorpha*, Hodgson, connecting that division with *Paradoxornus*, Gould.
14. Rev. J. Mason, Maulmein. A few flat skins of bird. E. BLYTH.

For May Meeting, 1848.

1. J. M'Clelland, Esq, Bengal Medical Service. Skin of *Hylobates lar*.
2. Baboo Rajendro Mullick. A small species of Kangaroo, dead: prepared as a skeleton, the fur having been clipt short; skin of head preserved.
3. Capt. Roger Rollo, 30th Madras N. I. A few bird-skins, from the Nilgherries; and with them an imperfect skin of *Sciurus macrourus*, perfectly similar to the animal of Ceylon.
4. Capt. E. F. Smith, Sadyia. Skin of a new species and genus of Caprine Ruminant, with horns nearly as in the Gnoos (*Catoblepas*): adult female, now mounted in the museum.
5. Mr. McFarlane. 3 deformed living Pigeons.
6. Mr. Wagentrieben. A young living example of *Monitor salvator*, found on board ship upon the voyage from Bombay to Calcutta.
7. Mrs. Duncan Stewart. Three specimens of snakes, from the neighbourhood.
8. Capt. Phayre, Maulmein. A box of sundries, containing two skins, with separated skulls, of *Nemorhædus sumatrensis*, from Tenasserim: the hairs of the nuchal mane but partially white: portion of a skin of *Presbytis Phayrei*, nobis, XVI, 773: and imperfect skin of *Felis bengalensis*, resembling the ordinary Nepal, Assam, Sylhet, and Arracan variety, and not approximating to the markings of the Malayan variety (?), v. *F. javanensis*: vide p. 250, ante.
9. Capt. Berdmore, Madras Artillery, (through Capt. Phayre.) A living specimen of the large Tenasserim land Tortoise; identical in species with an individual formerly sent from Arracan by Capt. Phayre. E. BLYTH.

For June Meeting, 1848.

1. Walter Elliot, Esq. Madras C. S. Two skins, male and female, of the four-horned Antelope, sent as *Tetraceros subquadricornis*, Elliot, the male having the anterior horns reduced to slight rudiments not visible above the

hairy pelage of the brows. Nevertheless, it does not now appear to me that this animal is distinct from the common Bengal species, in which I find that the anterior horns very commonly remain permanently rudimental, as in an individual just dead, which I have kept for more than a year, and in another which I formerly possessed and which is also now mounted in the museum. These differed in no other respect whatever from a male which I still have living, but in which the anterior horns have attained their full development: and that the age of this and of the animal just dead was about the same, i. e. that they were kids of the same season, is indicated by their both shedding the blunt outer sheath of their horns at the same time. All are from the Rajmahl hills; and during the year and upwards that I have kept the animal just dead, its rudimental anterior horns did not increase in size. Capt. Hutton even writes me word—"Depend upon it all the 4-horned Antelopes are *T. quadricornis*—the development of horns is very variable. I have one skull in which the posterior horns are 3 in. long; the right anterior horn is $1\frac{3}{4}$ in., long and perfect,—whereas the left horn is not quite 1 in., forming a mere knob. I have been told," continues Capt. Hutton, "by sportsmen who had often shot them that the front horns are very often mere knobs, and that it is somewhat rare to get a perfect head in this respect." Mr. Elliot once sent me on loan a specimen with fully developed anterior horns from the Wynaad: but such individuals would seem to be rare in S. India. Of his (so termed) *sub-quadricornis*, he writes—"They are found throughout the Dekhan: the specimen now sent is from the eastern ghats between Nellore and Cuddapah. I have also received young living specimens from the hills above Chittoor and Vellore on the borders of the Barahmahl, which shows the distribution to be very general." The young might, however, be referable to either variety.

2. Major Ouseley, Chota Nagpore. Skin and skeleton of a young bull Gaour.

3. Baboo Rajendro Mullick. A dead Kangaroo, of the species *Halmaturus derbianus;* now preserved as a stuffed specimen.

4. Mr. Ransom, of the Pilot Service. A living Tropic-bird, or "Bosw'n bird" (*Phaeton æthereus*), since dead and preserved as a skeleton. This bird was very helpless on the ground,—unable to stand up, with its legs stretched outward; but on a steep surface it could climb, using its beak like a Cormorant.

5. Mr. C. McLeod. Skin of a large and very handsome Tibetan Dog, with Wolf-like head: and a collection of chiefly marine shells, with a few corals, echini, &c.

6. Mr. P. J. Van Grieskin. A living domestic cock, with one leg reduced to a minute rudiment.

7. G. T. Lushington, Esq., C. S., Almorah. A skin of *Ovis ammon* in good order; and two skins of *Gazella picticaudata*, (Hodgson,) one perfect, the other having the muzzle eaten away. The *O. ammon*, if not required by the Society (which it is not), Mr. Lushington requests may be presented in his name to the museum of the Hon'ble Company, in London.

8. J. M'Pherson, Esq. A few common Crustacea, among which is a *Palæmon carcinuos*, having an arborescent fucus growing from the extremity of the rostrum.

9. F. W. Russell, Esq. Collection of shells, chiefly marine.

10. Mrs. Bacon. A few shells from Australia and Torres' Straits.

11. Capt. Thomas Hutton, Mussoorec, some small birds from that neighbourhood, comprising 4 males and a female of *Ægithaius flammiceps*, a male *Picumnus innominatus*, and 13 other specimens, among which are two of a *Phylloscopus*, new to the Society's museum, but with which I have long been familiar.

E. Blyth.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of June, 1848.

Days of the Month.	Maximum Pressure observed at 9h 50m.						Minimum Pressure observed at 4 p. m.						Maximum Temperature.	Rain Gauges. Elevation.		Moon's phases.
	Barometer reduced to 32° Fahrenheit.	Temperature. Of the Mercury.	Temperature. Of the Air.	Temperature. Of Wet Bulb.	Wind. Direction from sunrise to 9.50 a. m.	Aspect of the Sky.	Barometer reduced to 32° Fahrenheit.	Temperature. Of the Mercury.	Temperature. Of the Air.	Temperature. Of Wet Bulb.	Wind. Direction from 9.50 a. m. to 4 p. m.	Aspect of the Sky.		Feet Upper	Feet Lower	
1	..	..	..	..	..	....	..	..	..	..	..	....	96.7	0.64	0.70	●
2	In29.610	90 3	87.9	80.8	N. E.	Cumuli.	29.493	86.3	82.3	77.8	S. E.	Raining.	95.3	0.76	0.82	
3	.607	91.3	90.9	82.4	E.	Ditto.	.545	82.5	82.6	78 4	N.	Cloudy.	96.8	0,30	0 36	
4S	.635	92.3	90.0	80 7	E. S. E.	Ditto.	.560	80.5	79 8	77.0	S. E.	Raining.	94.7	0.29	0 32	
5	.644	88.3	86.9	81.5	E. N. E.	Ditto.	.548	83.3	87.0	79.3	E. N. E.	Cloudy.	91.3	0.74	0.79	
6	.666	88.0	86.0	80 6	N.	Ditto.	.553	84.2	83.4	79.7	S. W.	Ditto.	90.0	0.18	0.22	
7	.696	87.8	85.3	80 4	S. W.	Cloudy.	.480	89.4	87.4	80.2	S.	Ditto.	91.8	..	..	
8	.507	91.8	89 0	82.0	S. W.	Cumuli.	.410	90.2	88.3	81.9	S. S. W.	Ditto.	92.4	..	..	☽
9	.532	85.0	84.2	80 0	S. W.	Ditto cloudy.	.425	90.9	89.0	81.3	S.	Cumuli.	91.3	..	..	
10	.550	89.3	88.5	82.3	S. W.	Cirro cumuli.	.436	92.4	91.2	81.5	S.	Cloudy.	93.8	1.18	1.20	
11S	.557	84.3	84.9	81.9	S. S. W.	Cloudy.	.444	83.8	83.2	79.0	S. W.	Ditto.	91.4	..	..	
12	.538	91.4	90.2	83.0	S.	Cumuli.	.439	90.5	90.2	82.5	S. W.	Cirro cumuli.	93.4	..	..	
13	.585	91.9	90.5	82.8	S.	Ditto.	.474	96.0	93.6	82.5	S.	Cumuli.	97.0	..	..	
14	.605	92.2	90.4	82.7	S.	Ditto.	.503	87.0	85.8	81.6	S. S. E.	Cloudy.	95.1	0.10	0.12	
15	.592	94.0	90.8	83.0	S. E.	Ditto.	.508	84.9	84.5	81.2	S.	Ditto.	94 9	1.54	1.60	
16	.583	93.0	89.7	82.5	S. E.	Ditto.	.438	95.4	91.3	82.0	E.	Cumuli.	95.3	..	..	
17	.532	90.3	88.6	81.9	S. E.	Ditto.	.410	89.8	88.0	81.5	E.	Cloudy.	91.9	0.44	0.48	○
18S	.466	89.8	87.4	81.7	E.	Cloudy.	.353	89.4	86.0	81.3	E.	Ditto thundering.	91.8	0 78	0 86	
19	.414	88.0	87.4	82.9	E. S. E.	Ditto.	.369	83 3	82.7	81.4	S.	Raining.	89.9	0.88	0.94	
20	.494	82.0	82.5	80 3	S.	Ditto.	.424	87 5	87.2	82.4	S.	Cloudy.	87.3	4.00	4.07	
21	.522	78.3	80.7	79.3	S. S. W.	Raining cloudy.	.418	88.3	87.4	82.4	S. W.	Ditto.	90.4	..	..	
22	.493	89.7	89.0	83.2	S. sharp.	Cirro cumuli.	.446	89.0	88.6	82.6	S.	Hazy.	92.5	0.12	0.16	
23	.544	83.0	82.8	80.0	S.	Nimbi.	.465	87.0	86.8	81.8	S.	Cloudy.	86 4	..	..	
24	..	..	..	..	..	....	..	..	..	..	..	....	92.4	0.09	0.16	☾
25S	.565	88.7	88 3	83 0	S. sharp.	Cloudy.	.474	89.7	89.4	83.8	S.	Cloudy.	91.4	0.58	0.64	
26	.549	85.4	85.5	81.3	S. W.	Ditto.	.472	91.6	90.3	83.5	S. W.	Ditto Cumuli.	92.4	..	..	
27	.531	88.5	88.2	82.0	S. W.	Ditto.	.469	94.8	93.4	83.8	S. W.	Cloudy.	95.4	..	..	
28	.597	91.4	90.4	83 6	S.	Ditto cirro cumuli.	.523	90.6	88.9	81.4	S.	Ditto.	95.4	..	..	
29	.640	81.4	82.2	77.9	N. N. W.	Raining.	.541	89.0	88.1	83.8	S.	Ditto.	90.8	0.06	0.03	
30	.608	89.8	89.3	83.4	S. S. W.	Cumuli.	.512	90.7	88.7	82.6	E. S. E.	Ditto.	93.9	..	..	
Mean	29.563	88 6	87.4	81.7			29.469	88.7	87.3	81.4			92.8	12.68	13.52	
Corresponding month of 1847.																
Mean	29.585	89.1	87.5	8.18	..		29.494	90.1	88.5	81.7			92.7	10 28	12 01	

JOURNAL

OF THE

ASIATIC SOCIETY.

SUPPLEMENTARY NUMBER FOR JUNE, 1848.

THE TURAEE AND OUTER MOUNTAINS OF KUMAOON,

By Major MADDEN, *Bengal Artillery.*

(Concluded from page 450.)

11*th March.*—To Kulounia, called 8 coss, about 12 miles, which, with the intensity of the heat, direct and reflected from the mountains, at the very foot of which lies the rough and circuitous pathway, greatly fatigued the coolees. The following stations occur: Gurjoo Goth, 2 coss: Belpanee, 1: Sukar Kholee, 1: (both these are just deserted:) Dogaree, 1: Deolagar, 2: Kulounia, 1 coss.—These are generally at the exit of a stream from the mountains; placed amidst the most lovely scenery; the mountains of every height and form, covered with forests of every tint, green, red, and yellow. To the right of the path stretch to the south several prairies of tall grass, where the guides were in no small fear of encountering the elephants, which are infinitely more dangerous in their opinion than the tigers: but neither appeared. Between Doogola and Gurjoo, we passed a pretty large, but nearly dry channel, called Kullooah Ghat, about a coss up which is Burgoth: we avoided this, and struck direct through the Sal forest, regaining the path a mile eastward. A little east of Belpanee, the route passes Lybur Mundee, whence there is a hackery route to Bireea Mujhoula; it lies on the north bank of the Kaminee river, which here leaves the mountains with a brisk current. The Mundee enjoys a considerable traffic in timber, bamboos, and hill products. The Kaminee flows on the right hand down to Dogaree, "the two streams;" this is the

name of another considerable Goth in an open prairie, where it receives a tributary of equal size from the east, the Deolagar; this gives name to another mart for timber, &c. close under the hills. The path keeps to the right or north bank of this stream, under a beautifully wooded escarpment; on the summit of this, two miles east of Dogaree, is the Syna ka Panee Goth; and at its base crop out large masses of brown iron ore, or brown Hæmatite, said to be rich in metal, and often associated with coal. The spot is called Dhan Dhoonga. The last two miles from Deolagar to Kulounia lie through Sal forest, with half a mile more in the deep Khyr and Seesoo growing bed of the Puneean or Punwyn river, which is about 100 feet below the level of the Sal, and carries a small stream of good, clear water. It is said to be called Jugboora in the plains, and to flow to Suniya, 5 coss down; dividing the Choubhynsia district from that of Tula Des—"the low country," which includes Burm Deo, and the outer hills as far as Chhirapanee. Kulounia is a small Mundee just on the gorge of the mountains, on the west bank of the Puuwyn: now vilely hot, with myriads of flies, and little or no shade. The inhabitants are mountaineers from Furka, and traders from Peleebheet, engaged in the timber and drug business. One of these, Nuthoo Mull, who also keeps a Buniya's shop, was very civil, and gave me shelter under his roof; the heat in a pal being insupportable. He has 10,000 rupees embarked, chiefly in the manufacture of Kuth, (Terra japonica) here called Kutha; but nothing comes amiss: till late at night he was sedulously engaged with the hillmen, and loud and frequent were the disputes as to the value of the various articles, which he purchased, independantly and in small quantities: no temperament but that of a Hindoo could stand the wear and tear. The following are the prices he pays:

Babur or Byb grass: 3 to 4 rupees per 100 muns.

Moonj, Sirput, and *Tat* culms for pens: various.

Ghee: 1 rupee for 7 kucha sers.

Borax, bronght by the Bhotiyas: 7 to 8 rupees per mun.

Lichens for dying rose-color: "Chulpooree," "Charchubeelu," 1½ rupee per mun.

Turmeric: 4 rupees per mun.

Myrobalans (Hur) 1 rupee per ditto: said to be produced (abundantly) only every third year: a belief common here in reference to many other fruits.

Madder: "Munjeeth," 4 annas per Puseeree.
Kaephul bark (Myrica sapida,) 2 pice per ditto.
Tuj bark (Cinnamomun albiflorum,) 1 ana per ditto.
Tuj leaf. ..... 1¼ ditto ditto.

Bamboos	small: 20 to 30 score per rupee.		
	medium.	6	ditto ditto.
	large.	2	ditto ditto.

Soapstone: "Khuree." *Probably from the Thakil.*
Kuth, Catechu, 6 rupees per mun.

This traffic will be terminated in a week or two, as the mountaineers cannot stand the heat: the Kuth manufacture, however, goes on till the setting in of the rains: the workmen, who are all Dooms, called "Khyrees," from the Acacia catechu, then retire to the hills till December, and Nuthoo Mull retreats to Peleebheet. During the season, one portion of the Khyrees is constantly employed in cutting down the best trees, and for these they have to search far in the jungles: only those with abundance of red heartwood will answer. This is chopped into slices a few inches square. Under two large sheds are the furnaces, shallow, and with a slightly convex clay roof, pierced for 20 ordinary sized Kedgree pots: these are nearly filled with chips: and water is then poured in and boiled, till the contents of twenty will only fill two pots; which takes place in about an hour and a half. The liquor resembles thin, light Port, and the Kuth crystallizes on leaves and twigs thrown into it for the purpose: each pot yields about a ser: of an ashy white color. The work is carried on for 20 hours out of the 24, by relays of women and children: the men merely preparing the wood; this after being exhausted, is turned to account as fuel. Each furnace pays a tax of 4 rupees per annum to Government.

Nuthoo Mull informed me that the open bed of the river exposed to the full force of the wind, is the only ground tenable during the hot season, and that at the expense of much fever. Wherever from the contour of the mountains, or the screen of the forest, the wind is excluded, the climate is deadly. All agree that in advancing eastward, the Turaee becomes more unhealthy; a fact more to be attributed to its increased moisture and denseness of vegetation than to any addition of dimension: for it appears from Kirkpatrick that the Nepal forest is not above 10 miles wide.

The Buchanania latifolia: "Mooria" and "Piyal," the fruit "Chironjee," is abundant on the hills behind Kulounia; and in the thickets are Ventilago maderaspatana, with Berchemia laxa? both called "Kalalug," but the former also known as Rukut-peeta. Mimosa rubiginosa: "Ugla," Acacia cæsia, "Kutrar," and an enormous climbing Acacia, called "Agla" and "Awul," are also common. The stem of the last attains a thickness of two and a height of 100 feet: the bark is used for what Roxburgh calls the "nefarious purpose," of poisoning fish. It seems to be his Acacia pennata.

The epochs of the months, as kept here by the Peleebheet traders, differ from those of the mountaineers. Thus, according to the former, March 12 answers to the 10th of Chyt, while by the hill reckoning it is only the 1st. The difference is said to be occasioned by the lowlanders employing the lunar month, calculated from the full-moon: the hillmen use the solar month, calculated from one *Sunkrant* (or sun's entrance into a sign) to another, commencing the year with Magh, answering to January and February, and so on: the 9th month they call "Ussouj," a corruption of Aswuyuja; and the 11th, comprising Nov. Dec. is "Mungsir," from "Mrigasirus," "the head of the deer," one of the 27th Nukshutras or lunar mansions. The "Sunkrants," are all more or less observed as Holydays: that of the sun in Aries is illustrated by the Holee, which is kept by the Gorkhas with a regular May-bush, cut and brought in with pomp and music, and decorated with parti-coloured shreds, as used to be the case in England; the sun's entrance into Libra in Ussouj is also a great day with the hillmen, being the Kalendaric termination of the wet season, and commencement of the autumnal harvest; on this occasiou a human effigy called "Khuturwa," is made of straw and sticks, decorated with the jhoola (Antennaria) and other flowers, paraded about the village, and in the evening thrown into a large bonfire: an emblem perhaps of the parting sun.

12*th March*.—To Burm Deo, 8 coss, about 10 miles. The places which occur on the route are Tootooria, 1 coss: Chela, an open spot without trees or water, (such are called "Thuppur"); both these Goths are just deserted: a little beyoud Chela, called 2 coss from Tootooria, is Kopatal, so named from a deep pool formed by a stream which here issnes by a most romantic, shaggy, glen from the monntains: the path ascends by its right or south bank through Sal forest to Dana Goth

1 coss; this is rather a large settlement, still tenanted by people from Chumpawut. Nearly opposite this, at the base of the mountain is Bushtia village, above which are the fort and pass of Timla, leading to Chumpawut, and crossing the Ludheea river at Kela Ghat. Timla fort is 3908 feet above Calcutta; Kela Ghat 2204;—it was by this route that Captains Gardner and Hearsay invaded Kumaoon in 1814, but miscalculating the strategy and bravery of the enemy, were defeated and taken prisoners by Hustee Dul near Khilputee, and carried to Almorah. The pass is said to be very easy, and as the only made road goes round by Burmdeo, it is in contemplation to construct one here, which would greatly benefit the communication between Suniya and Chumpawut. Limestone is to be had at Choonapanee, somewhere near Bushtia, 1587 feet above Calcutta. Dana Goth is situated on the N. W. bank of a wide stony channel, the Keela rowl; the path crosses this and keeps its left bank for half a mile towards Khulooa Kholee, 1 coss: and then proceeds viâ Ginda Khalee and Bhewria Khalee to Burm Deo. At these last clearings, and others in this direction, rice, ghweeas, turmeric, &c., are cultivated in the hot and rainy seasons: but the farmers all take refuge nightly in the mountains; the young plants are protected from the heat of the sun in April and May by screens of Sal branches with their leaves, which check the evaporation. From this point the Sooa river is seen entering the Kalee about 2 coss south of Burm Deo: it flows in a very wide stony bed, and comes from the west, apparently combining all the streams which do not join the Dewa. Somewhere on its banks the Gorkhalees under Hustee Dul were defeated by the Rohillas.

Bhewria Khalee is about one coss from Burm Deo, on the brink of the low Kadir land, which seems admirably fitted for cultivation, but is very partially tilled. As far as Chela Goth, the path to-day was bad, with several steep stony ascents and descents at the torrents which cross it; from Chela Goth there is a hackery track through the forest to Burm Deo; but the guides frequently adopted short cuts, which were bad enough.

Burm Deo is the great mart for Eastern or Kalee Kumaoon, and the Gorkhalee province of Dotee. Its proper name is Moondias, Burm Deo being a Goth about a mile north, the limit of wheeled carriages, opposite to which the Kalee pours down in its last rapid. Here it is said

that Bruhm did penance—not Brahma the Creator, who in these parts is reduced, under the designation of Choumookhee, to the office of an agricultural care-taker,—but the Supreme Being himself. No one can say for what purpose HE did so: but a Hindoo is never at a loss for a reason, and when twitted with the peccadilloes of his gods, will reply that they were always well whipped for them: and if gods do not escape punishment, how much less men! a conclusion more ingenious than sound. Burmdeo is given as one of the Kutyoor rajas, and the place may have been named from him. Except in the unhealthy season, Burm Deo is not a scene for penance; it is on the contrary, placed at the gorge of perhaps the most magnificent portal to the Himálaya. The Kumaoon chain, bold, lofty, and scarped, with a superb glacis of forest along its base, here meets the Dotee mountains at a right angle; these, if possible, clothed in still thicker forest, extend north and south, running far down in this last direction, with the Kalee flowing at their foot so closely as to leave our restless neighbours scarce room for their Mundee. The river indifferently known as the Kalee, Surjoo, Sarda, Ghughra, winds its way through the angle to the N. E., where the mountains on the Kumaoon side are scarped into lofty walls and pinnacles, on the topmost of which, about 8 miles distant, is the far-famed shrine of Poonagiri, where Devee is adored by pilgrims from mountains and plains. Behind this, the magnificent mountain of Nalee-mun rises far above the forest: on its western flank is the pass to Chumpawut.

The Kalee opposite the Mundee, is about 100 yards across, and from 10 to 15 feet deep, perfectly clear and flowing with a strong steady current, like the music of Mira O Norma; it is now about 20 feet below its level in the wet season: the only means of passing are four canoes, the hollowed trunks of Semul trees, two of which are ours, the others belong to the Gorkhas. During the malarious season, or from May, when Burm Deo becomes a solitude, the boats are hauled out and laid up in ordinary. Below Burm Deo the river wanders amongst a labyrinth of low stony islands covered with Seesoo; they belong to the King of Oude, and are called "Chandnee Chok," apparently in jest. Great quantities of Sal, Seesoo, Bamboos, &c. are floated down from the mountains, and 30 miles below this, the river becomes permanently navigable at Moondia Ghat, the Gurhmooktesur of the Surjoo. It is described as flowing between steep, well-defined banks, through a beau-

tiful country, and joins the Gogra proper at a place called Swurg-dwara "the gate of heaven." Captain Herbert calculated the following as the discharge per second in cubic feet, where they enter the plains :—

Kalee 4,800.

Jumna 4000.

Ganges 7000.

Sutluj 8,100. This is probably greatly in excess : the last is certainly a smaller river than the Ganges.

Moonias Mundee is placed close to the right bank of the river, 885 feet above Calcutta : it consists of one good broad street, but the habitations are mere sheds constructed in the slightest manner of mats and sirkee, so as to be taken down on the first alarm of fire, which has destroyed the place more than once, and is especially fatal here from the furious gales which blow alternately up and down the river : they are stocked with vast quantities of turmeric, &c. denoting a very considerable traffic : and sold, I was informed at the following rates :—

Peepla mor (Piper longum root) : 5 to 20 rupees per mun.

Rooenee (Rottlera tinctoria powder) : 10 to 16 ditto.

Lodh bark (Symplocos racemosa and paniculata.)

Balchhur or Mashee (Valeriana Jatamansi, Spikenard) : 10 ditto.

Sohaga (Borax), ... 10 ditto.

Turmeric, $4\frac{1}{2}$: Ginger 5 per mun.

Ilachee (large Dotee Cardamoms) :..... 20 ditto. of

Churayuta : 2 sorts, chiefly from the Thakil and other mountains Shor and Dotee—yellow root..... 4 ditto.

dark root..... 2 ditto.

Honey, Wax, Sunkhya and Hurtal, (from Tibet,) Kutki, (Picrorhiza), Rhubarb, Meetha (Aconitum ferox), Nigala Bamboo, hawks, the Nepal black Myna (from Dotee, each pair costing 5 rupees and paying 12 annas on crossing the river!) and a drug called *Churmis*, are also procurable here : the latter seems to be a root, of the same nature as the Aconite, but longer, thinner, and much curved : from these circumstances it would be identified with the Seengiya Bikh, but the druggists say they are different, and the Churmis is attacked by *insects*. The word comes from the Sanscrit Churmmu-kusha "destroying the skin."

Most of the dealers here are from Peleebheet, which is a place of much trade and importance, by their account.

Opposite to Moonias Mundee the Gorkhas have their mart, called Sooa Mundee, built irregularly on the stony bed of the river, and backed by a high bank of clay and gravel, on which grows the forest. The situation is inconvenient and confined: much less business going on than on our side, where there are no duties. The Gorkha government farms its duties here for 24,000 rupees per annum they told me. They keep here a party of 25 Sepoys, apparently Dotee men, under a Soobadar; the authorities and the people were very civil in showing me over the mart, but the former will not admit further progress: in truth, as there is nothing but forest and mountain, there is, save to the naturalist, no great inducement to wander. The civil authorities were in Kucheree, but seemed to have little or nothing to do; yet on our side the general impression is that crimes and outrages of every description are rife, and meet little check or redress in the Gorkha territories. Our people occasionally complain of the delays of the Courts, and the corruption of the native officials, who always side with the longest purse, but no one can travel over India and enquire amongst the mass of the people without finding a very generally expressed opinion of the superiority of the English rule; and, in native states, a frequent wish to come under it. "Is the rule of the Gorkhas returned?" is the usual exclamation in Kumaoon where a person thinks himself wronged.

A cursory examination of the forests about Burm Deo and Poonagiri discloses a number of interesting plants: and probably the glen of the Kalee up to Ascot would afford many novelties.

Xanthoxylon Connaroides? W. and A. arboreous: near the Bitreegar.

Petalidium Barlerioides: "Bukroula."

Eranthemum nervosum.

Strobilanthes auriculata: "Til-kupooree."

Phlogacauthus thyrsiflorus.

Gouania nepalensis, Wallich.

Acacia "Khyn:" an armed tree with the blossoms of the Khyr and the fruit of the Siris: wood excellent.

Inga bigemina: "Kuchlora," a large and useful timber tree.

Symplocos spicata: "Lodh," a large tree. The pitcher-shaped, ribbed seeds, called "Bholia," are worn in necklaces by children at Almorah to preserve them from ghosts, &c.

Annona squamosa: "Behé," most abundant in the swamps.

Ficus Kuthburee: a large tree. Poonagiri.

Roudeletia exserta? a tree, common also at Gungolee Bridge.

Chonemorpha (Echites) macrophylla: "Gur-budero."

Sabia pauiculata: "Bukul-puta:" an extensive rambling, scandent shrub, with yellow flowers, at Poonagiri: on the Buliya: and at Gungolee Bridge.

Bassia butyracea: "Chyoora:" from about 1500 or 1800 feet up to 4500: abundant in the shady glen below Poonagiri.

Wallichia (Harina) oblongifolia. "Gor-ounsa." "Kala-ounsa." ("Black Reed"): shady glens about Poonagiri temples. The fronds of this palm are said to form an imperishable thatch, and are also used for combs.

13*th March.*—To Poonagiri temples, about 8 miles E. N. E. and back to Burmdeo in the afternoon. The route is by Burmdeo Goth, of which the houses are permanent and firmly built on posts: this is the residence of the ferrymen. Hence we followed the Chumpawut road for $1\frac{1}{2}$ or 2 miles, undulating on high ground covered with forest, the Kalee following beneath on the right hand in a magnificent gorge. The path then quits the main road, turning off to the right near Raneehath Goth, and for the rest of the way is rugged and difficult, the Ladagar torrent following in a woody ravine on the left. The total ascent cannot be under 2000 feet, which would make the elevation of the shrine nearly 3000 above the sea: at this level, though greatly cooler than Burmdeo, the malaria of the Bhabar still prevails, with Sal woods and fine clumps of bamboo, which last, being sacred to Devee are never cut, the popular belief being, that if converted to use, scorpions and centipedes innumerable would issue forth to punish the sacrilege; so amongst the Greeks, the cultivation by the Phocians, of the Crissæan Plain, dedicated to Apollo and to perpetual sterility, induce the sacred war. It is not generally known that the vernacular "Bans," Bamboo, comes from *vuns*, a family, either from the habit of the plant to produce its numerous stems in clumps, or from the fact that under the patriarchal Government, as still under the Chinese, the Bamboo is a chief means of maintaining social order. The Sal in Kumaoon is found, mixed with Cheer Pine, fully up to 3500 feet, a much higher level than it attains to the N. W. On the sunny slopes about the

Poonagiri temples the Byb or Babur grass (Eriophorum cannabinum) is abundant, and does not appear to flourish at much lower levels.

Nothing can surpass the variety and beauty of the scenery about Poonagiri: nature absolutely revels in the luxuriance of the universal vegetation, which no American forest, north or south, can possibly exceed; but to superstition alone are we indebted for a path through and over the otherwise impassable thickets and precipices. The first symptom of sanctity in the wilderness is a small Murhee, dedicated to Bhairoo, or Muhadev, considered as his own door-keeper; here the pilgrims leave their shoes; and no man of low caste, of notoriously bad, or even unfortunate character, or filthy in person or discourse, is knowingly allowed to advance further. Coming under the first, at least, of these predicaments, I had arrived within a few hundred yards of the small village of Toonias, the residence of the 20—30 Poojarees who do the honors of the place, when, to my astonishment, I was assailed by the whole crew, loudly proclaiming that the shrine was deserted by my intrusion, that no European had ever approached it before, and demanding, in a very insolent, and almost violent manner, my immediate return. I assured them that such was impossible during the heat of the day, after a three hours' walk; that I certainly should not descend till I had breakfasted and looked about; and that the mountain was mine as much as theirs. They were exceedingly angry; but we at length effected a pacification by the compromise that I was not to go nearer than a hundred yards to any of the temples, and that I was to offer a bottle of cognac to the goddess, in default of a goat, which was not to be had, and about which I demurred, though they alleged the example of sundry sahibs, who had sent proxies for this purpose. On the contrary, I expressed my horror and disgust at the custom of polluting the hill-tops and groves, with the gore of miserable bleating kids and goats, which must have a tendency to brutalize the character, to reconcile and familiarize the mind with bloodshed and murder, and to foster the pernicious sentiment that the gods are necessarily pleased whenever themselves and their priests are stuffed with roast-meat. A most furious altercation among themselves, which lasted about two hours, respecting the division of the spoils of my followers and other pilgrims, was the corollary to this homily.

Toonias Hamlet lies in a sheltered glen about 200 feet below the

westernmost of the three shrines, the only one which I visited; it is a small, black, domed structure, coated with copper, and placed on the crest of the great mural precipice of sandstone which here faces the south. A little to the south-east, this wall terminates and the mountain springs up into a very lofty and remarkable pinnacle of rock, presenting a precipitous face to the river, which rolls at its base in a winding chasm of vast depth, the waters generally calm and of a lapis-lazuli tint. The gorge makes a rapid bend here, which brings the current right against the upper end of the cliffs, which perhaps owe their existence to its slow operation. Each shoulder of the rocky pinnacle is consecrated by its temple, the easternmost being the most sacred, and of very difficult access over cliffs and razor-edged ridges. Here the animals are sacrificed, and the sinners properly japanned and fleeced. The Brahmans appropriate the head, and I believe one shoulder of each beast assassinated, with all the cash they can extract, and considerable numbers of cocoa-nuts, the offering of which seems to be a sign connecting the mountain goddess and her rites, with the ocean-loving Kalee of Calcutta. The acme of merit is attained by him whose offering, like Balak's, consists of seven goats. The peak itself is the adytum of the goddess, where none can intrude with impunity: a fukeer who ventured to do so in days of yore was hitched across the river, and found flattened to a pancake in the Sidh Bun of Dotee.

The classical name of this holy site is Poornagiri, which the Brahmans render by "complete or entire mountain," an unhappy interpretation, since the mountain is cut in two, and one half removed; a more likely derivation is afforded somewhere by Wilford in the suggestion that the Anna Perenna of the Romans was identical with the Sanscrit Unn-poorna, "The filler with corn," a name of Devee, indicating also by the suppression of the digamma, the origin of Diana (grain goddess) and Demeter (Ceres) Mother-goddess: the Indian goddess being still familiarly known as *Maee* and Muha-Maee; "great mother." She is also adored near Almorah as Putal-devee, Queen of Hell, a function similar to Persephone's. At Nynee Devee on the Sutluj, at Kedarnath, at Syama or Siahee Devee near Almorah, and probably at Poonagiri, she is entirely clothed in black, and we find that one of Proserpine's epithets was *Melampeplos*. The most philosophical in-

vestigators into the nature of mythology seem now agreed that the legend of Ceres, and Proserpine "gathered by gloomy Dis," is to be explained by the history of Seed-corn from the time it is buried in the earth to harvest: those who "plucked the heart of the mystery," were not perhaps aware that Proserpina is good Sanscrit (prusurpun) for the "sprouting," or germination of corn: Burns has done unconscious justice to the allegory so understood in his spirited Ballad of "John Barley corn." By such clues we come to reject the Miltonic but puerile doctrine that the deities of the nations are so many "real essences," intelligent, but generally malevolent; to replace it by the conclusion, drawn from a multitude of converging proofs, that they are none other than the powers and operations of nature deified in the struggling infancy of agriculture and society. As such, the adoration still paid them, if useless, is at all events harmless: and viewed in the light of reason, their worship, personified as idols, is by no means so different from our own as to justify the outcries which resound from the oracles of Exeter Hall, ever ready to judge another man's servant. For, says Locke, man being the measure of all things, can only form an idea of the incomprehensible divinity, by enlarging towards infinity, as best he may, the qualities and powers, which by sensation and reflection, he perceives to exist in himself. He allows, in degree, the same attributes, to the angels, &c.; but in neither case can his ideas surpass in number and variety the qualities which he experieuces in his own mind. And then the English metaphysician and man of sense, goes on to conclude that the First Being "it is certain, is infinitely more remote, in the real excellency of his natnre, from the highest and perfectest of all created beings, than the greatest man, nay purest seraph, is from the most contemptible part of matter; and consequently must infinitely exceed what our narrow understandings can conceive of him." It appears, then, that whether the object be the abstract conception and work of our minds, and their image, or that of our bodies and the work of our hauds, it must infiuitely fall short of the truth; and that neither party can consistently upbraid the other with its mean conceptions of the divine nature. In this view, also, the Brahman is justified in his tenet that Bruhm is identical with his own mind. The argument might, by those concerned, be turned to good account against the Mohammedans, by showing that their idea of Alla is not so utterly

removed from that of the idolators as they commonly plume themselves; while it is certain that no people are more ingenious than the Hindoos in concealing their ignorance on these subjects under the mist of grandiloquent negatives.

During the heat of the day, whether exhausted by their quarrel, mollified by the brandy, or acting on the Shaksperian maxim that "things without remedy should be without regard," the Brahmans became more reconciled to the profanation of my presence, and entered on a conversation from which I learned for the first time, that the position in time of the Dwapúr and Treta Yoogs had been inverted; the latter, which would have been the third in order had events followed their natural course, having by the will of the gods, become in reality, the second age; while the Dwapúr became the third. To what reformation of the Indian Kalendar such a countermarch should be ascribed would now be difficult to discover, and were the events historical, would sorely puzzle the chronologist; but where all is chimera and fable, it is of no importance how the parts are arranged. During the Golden age my informants agreed that men, and even women, were very silent, and only used their tongues from urgent necessity; a sufficient proof, as I told them, that the Iron age was fully come. Their dogmas on the mathematical ratios of virtue and vice in the Four ages are calculated to exercise an injurious influence on the national morals; for where men are taught that crime and calamity are destined beforehand to become more and more rife, they will commit every enormity with a pious resignation and conformity to the will of heaven, and "make guilty of their disasters, the sun, the moon, and the stars, as if they were villains by an enforced obedience of planetary influence." Would not a general reformation, bring about a state of affairs, which, by contravening the statements of the Shasters, would, in fact, disprove their divine origin? But the prophecy is really working itself out so far as the institutions of Hindooism are in question; daily are Bráhmans less and less honored, kine more and more eaten, widows less and less burned. The dominion of the English in Hindoosthan was, they said, clearly predicted in the Poorans, with an assigned duration which would satisfy even the proprietors of railway and India stock, and fill with dismay the hearts of Parisian Journalists; these seers of Kumaoon, who know very little of the present, and, save the

dreams of the Shasters, nothing of the past, assured me that we were safe for I know not how many thousand years. On such occasions one is inevitably reminded of the aphorism stamped by the quotation of Alexander—a fair guesser is the best prophet—as well as of the famous Divining Ape of Master Peter, who, as his owner candidly admitted, told much more concerning things past than things to come. It is, fortunately for human responsibility, a mark of authentic prophecies to be so obscure before the event, and very frequently even after it, that it is impossible for the agents to discover that they are merely performing what had been written of them ages previous to their birth; but Hindoo prophets thought differently, and if my Bráhmans were not lying or deceived, the rise and progress of the English in India is detailed in their books with a minuteness surpassing even the notices of the kings of the north and south; of our decline and fall, distant as they are, they politely omitted all discussion. The pilgrims begin to arrive here in November, and the Teeruth ends in April.

14th March.—To Belkhet, 13 miles, over the Byala or Bylchheena Pass; the road gradually rises, with several interruptions where torrents occur; pass Chundrabun, a deserted Goth, marked by a large Peepul tree: then the Bitreegar nudee, carrying a good stream of brilliant water; next, Tula and Mula Duh, two small, cultivated, crater-like depressions; and, a little higher, the Toongagar stream. In this neighbourhood there are said to be some small tarns called Shiala, which I did not visit. At the Toongagar the road becomes excessively bad, very indifferently lined, and almost blocked up by large angular boulders. A steep, and at this season very hot ascent, leads to the crest of the Bylchheena Pass, from 4000 to 4500 feet above the sea. Near the summit, Mr. Lushington, the Commissioner, has constructed a Noula or covered well, which affords the fainting coolee a very welcome and necessary refreshment. A favorite Dhurmm, or good work amongst the richer natives of the mountains, is to pay a man of good caste to station himself in such sites as this, and supply gratis, without distinction of caste, a cup of cold water to every passenger; the custom is known also in the plains, and is said to be founded on the express precept of the Shasters; it seems unknown to those who in Europe and elsewhere declaim so volubly and so ignorantly against the selfishness of the Hindoo nation.

The descent from the pass is continuous on the north side, and latterly very steep, to the Ludheea or Loodheea river, 4 or 5 miles down: it is even now a pretty large and rapid stream, and when the rains fill its wide stony channel becomes unfordable, and closes this route for many days together; not that in the wet season it is much frequented; but many fatal accidents cry out for a bridge. Its sources are on the southern face of the Deo Dhoora range, whence, separated from the plains by the Dhyanee Ras and Tula Des mountains, it flows S. E. to join the Kalee above Burm Des, about 4 miles below Belkhet. The road from the foot of the pass turns to the left, up its right bank, and in a mile or so we reach a hut, with some scanty cultivation across the river, which bears the name of Belkhet; but no supplies are procurable here, or indeed any where between Burm Deo and Chumpawut. The glen is here less than a mile across, and being only 1300 feet above the sea, and walled in by lofty mountains, is exceedingly hot and unhealthy. The pretty Bantam-like jungle fowl is very common, and so tame that I noticed several emerging from the thickets to fraternize with their bulkier but degenerate race of the barn-door.

The scenery of to-day's route is beyond praise; and everywhere the mountains and vallies exhibit the most exuberant vegetation; the "dense forests of exotic plants," noted at p. 25 of the Geology of Kumaoon; an inexact phrase which is repeated in the map on each side of the Surjoo at Ramesur Bridge: but properly speaking, the plants cannot be said to be *exotic*, unless removed to the Edinburgh, or some other foreign Botanic Garden. Besides those of Burm Deo and Poonagiri, the beautiful Pothos scandens covers the trunks of large trees on the northern aspect of the pass; where also, in the damp, half dark glens, the still more beautiful Wallichia Palm occurs in profusion (which, till the fruit was seen, I took for a Fern,) with here and there a specimen of the wild Plantain (Musa,) probably its utmost limit to the N. W.; but in the glens of the Kalee and Goree rivers, near Askot, it forms whole jungles. On the southern side of the pass, especially about the Toongagar, the Thunbergia (Hexacentris) coccinea, called "Kul-jonka," climbs abundantly over the lower trees. Mr. Batten brought me specimens from the Doorga Peepul pass, a few miles N. W. of this, beyond which it is hitherto unknown: (since met with in the Bunlouree pass.) Towards the summit of the pass, Cissus serrulata

covers every rock, and Olea glandulosa (or compacta) forms a large timber tree; monkies and *langoors** are innumerable, and no doubt a proportion of tigers to feed on them; the flesh of the monkey however is said to be too pungent for the tiger.

The Byala pass is described by Dr. McClelland to consist of argillaceous and calcareous sandstones, which Dr. Falconer has since observed to be in one spot greatly altered by a trap-dyke. The Belkhet valley consists of greenstone and dolomite; the mountains to the north exhibit green and blue dolomite in vertical strata, with hornblende slate near the Ludheea; the summits are of gneiss and granite which last Dr. McClelland found reposing on gniess and hornblende slate on the S. W. declivity of Chhirapanee.

The usual solitude of Belkhet is just now enlivened by considerable numbers of families returniug with their cattle from the Bhabur; several parties of Darma Bhoteyas are also on the way back to their native snows, their sheep and goats well laden with cloth, sugar, sweetmeets, tobacco, and grain: not a man present with this party understands a word of Hindoostance or Hindooee.

15*th March.*—To Chhirapanee, 12 miles, which took the best of my coolees 7, the worst 9 hours to accomplish: the elevation is probably from 7000 to 7500 feet, which gives about 5500 for the stage. The route penetrates the entire zone of Pinus longifolia, and then enters the region of Quercus incana and lanuginosa, Androsace lanuginosa, and similar evidences of considerable elevation. In many spots the mossy banks and Quercus incana were matted with Orchideæ, amongst which I recognized Cælogyne nitida, "Hurjoj," Phaius albus, Dendrobium Paxtonii, Octomeria spicata? "Guroor-punja;" Oberonia iridifolia, and several others unknown. Near Chhirapanee at a probable height of 7000 feet is a bed of Tulipa stellata, the most elevated spot at which it has come under my observation; its natural belt appears to be from 3500 to 6000 feet above sea-line; it certainly does not reach near the limit of perpetual snow where Humboldt places it. (Cosmos I. Note 4.)

On leaving Belkhet, the road follows the right bank of Ludeea for a mile or more, and then under a small village called Oopurkut, placed on a cultivated plateau, crosses the stream where the entire width of the glen is occupied by its channel of stones and huge boulders, the

* Entellus.

latter rudely piled on each other with a general dip towards the head of the stream. (R. S.) Here the Ludeea receives from the north a small, but brilliantly clear tributary, the Bhubgoolia, up the course of which lies the road, now commencing to rise in earnest; as do the rocks on every side in vertical walls. The first crest is attained at a village called Kookrounee; hence along an undulating ridge, 2 miles to Sulla, a fit place to breakfast; there is a Deodar grove and spring called Burm, about a mile beyond this, a little down to the east. Here commences the second pull up one of the great spurs of the Kanadeo range, the Gagur of Kalee Kumaoon, and only terminates about three quarters of a mile short of Chhirapanee, which lies rather beyond the highest point of the pass. The declivities on each hand during this ascent are extremely steep and deep; beyond them to the left is the Loungehoola range, connected with Kanadeo: its spacious pine-covered flanks present numerous patches of cultivation.

Chhirapanee, sometimes called Chourapanee, derives its name from a small stream which falls over the rocks here in a petty cascade: rising in the Kanadeo summit, which may be about 700 feet above to N. E. and is estimated by Dr. McClelland to be 8000 feet above the sea. It is 24 miles due east of the Birond summit near Bumouree, and like that, is one of the Trigonometrical stations: the Quercus lanuginosa (Reeanj) clothes the summit, which is consecrated by a neat temple to Muhadeo, invoked as "Kanadeo;" "the God with one eye." Beyond a neck, the range is continued to the east, in two more great points of equal elevation: and there appears to trend S. E. The view hence, as from camp (there is no village,) is grand. To the south, Nalee mun is conspicuous amongst the outer ranges; to the N. W. far beneath, is the broad undulating vale of Kalee Kumaoon, studded with dark groves of Deodar, but otherwise highly cultivated, with the old capital of Chumpawut W. N. W. towards its farther extremity; beyond this, partially concealed by the intervening ridge of Mulsa Deo, is the basin of Lohooghat; to the N. E. is seen the precipitous face of the Thakil; and to the north, and far on each side, the snows. They assume forms considerably different from those in the vicinity of Almorah; the Trisool is foreshortened into a bastioned mass like that of Budreenath, and brought nearly into contact with Nunda Devee; the pinnacles of the Punj-choola, immediately in front,

are compressed into a cluster; while the vast gronps of Dotee and Joomla appear to eclipse Nunda Devee itself in mass and elevation. The scene is such that Muhadeo has need of both his eyes to do it justice.

16*th*.—To Lohooghat, about 10 miles; all descent for several miles into the vale of Chumpawut, which the road traverses for several miles —leaving the place so called to the left: it occupies a spur of the sloping western mountains, but is now redneed to a village. The rock is gneiss and granite, decomposing rapidly, and to this cause Dr. McClelland (pp. 47, 48,) attributes the desolation of the city in a passage which recals the Burdens of Isaiah and Jeremiah against Babylon. The Almorah people assign a cause not less fanciful; according to them, the Raja Kulyan Chund, was hunting in the forest which then covered the site of Almorah; a hare chased into a thicket was metamorphosed into a tiger: which the Chaldæans pronounced an omen so auspicious that the seat of Empire was removed forthwith, with the promise that whoever dared to hunt any of his race, would soon discover he had tigers to deal with. As might be expected the real cause originated in political motives, A. D. 1563: conquests had been made to the northwest, and Chumpawut was not sufficiently centrical. Want of time prevented a visit to the spot, where the antiquities, especially a ruined temple, are said to be interesting. Before coming abreast of its old fort, the road passes by a fine wood of Deodar trees on a rising ground, on which is a temple to Gutkoo Deotah, in whose honor an annual fair is held here; this mound is said to be named "Koorm-achul," Tortoise mountain, in the Skund Poorana, because in this spot Vishnoo assumed the form of a Tortoise to support the mountain Mundura, when the ocean was churned for the water of life after the deluge. The designation of the province, "Kumaoon," is said to be a corruption of Koorm-achul; the people themselves write and pronounce it, "Koomaoo:" having the reputation amongst their neighbours of being quarrelsome and litigious, one is disposed to derive the word from "Koomun," evil-disposed; but such a brand would scarcely be adopted by the people themselves.

The old cantonment of Goorl-chour was situated to the left of the road near Koorm-achul wood; the site was hastily deemed unhealthy from the great mortality which occurred there in 1815, among our

sepoys ; the true source of which was their march through the Burm Deo Turaee in the months of June and July,—an open valley, elevated 5330 feet above the sea, or 5830 according to Mr. Trail's estimate, with a soil composed of decomposing granite, could scarcely contain in itself the seeds of disease to such an extent. It is traversed by the Geendia, an affluent of the Lohoo river ; an easy ascent brings the traveller to the summit of the Mulsa Deo or Makha Lekh pass, from which the station of Lohooghat is seen about three miles north ; the descent is gentle ; the hills prettily cultivated, and at their base the Lohoo flows in a deep rocky channel : it is passed by a picturesque but ricketty wooden bridge ; a little beyond this, on the left or east bank is the holy shrine of Rikhesur, prettily situated amongst cedar groves, and rejoicing in the privilege of a linga, which has the property of growth.

The station is a short walk farther, and occupies a pleasant tract of grassy undulating ground, sprinkled with Deodars, and the very neat and English-looking houses and grounds of the European residents. It is calculated to be 5649 feet above Calcutta. The granite of Chumpawut here disappears, and gives place to blue clay slate in vertical strata, with some quartz. The ground rises gently towards the north, and at about three miles distance is backed by the grassy saddleback mountain called Sooee in maps, but by the natives Jhoom. The summit is reckoned 7500 feet high, and Dr. McClelland quotes it at 8000, and states the rock to be dolomite ; Captain Webb at 5910, which must refer to Sooee, a group of villages on its western declivity or base, with a considerable tract of level cultivation, entirely in the hands of a Brahman colony, who are said to traffic advantageously with the Bhoteyas of Dharma and Byáns. The road to Pithoragurh passes between the mountain and the villages, where the slopes are beautifully wooded with Cedar.

The Jhoom mountain is continued far down to the S. E. to Khilputee, by a level, woody range perhaps 6500 to 7000 feet high, copiously wooded with Quercus incana and Rhododendron arboreum, &c. ; on this, about 2 miles, N. N. E. of Lohooghat, Mr. Batten, C. S. has a shooting box, called Rykot, commanding agreeable walks along the park-like plateaus, with one exception that the solitary wanderer runs a good chance of being picked up by a tiger.

On a conical peak, about 5 miles west of the station is Kotulgurh, the Fort Hastings of our maps, fabled to have been the stronghold of the arrow-demon Banasoor Danava and Daitya, son of Raja or Muhabuli, who here fought with Vishnoo and his Soors, and prevailed not, though the conflict was long doubtful. No sooner was a Daitya slain, and his blood poured on the ground, than it produced a hundred others, so that the greater the slaughter of their enemies, the farther were the gods from victory. In this difficulty, Muhakalee was created, like Pandora, by general donations from the celestials, and by her were the giants at length exterminated. Amongst those who fell by her hand was Kottuvee, the mother of Banasoor, who, with a coat of mail over her bust, and naked from the waist downwards, fought like an amazon on the battlements: which are said to derive their name from her exploits and appearance, Kotulgurh being interpreted by "The fortress, the abode of the naked woman."

The existence of Banasoor in any age or place would be a matter of no easy proof, but the received traditions of India locate Muhabulipoor on the Coromandel shore below Madras, and Banasoor still further south near Devicotta; the learned pundits of Kumaoon, however, locate all these wonders at and around Lohooghat, and affirm that Sooee is no other than Sonitpoor—"the red city," of the Shasters, the abode of Banasoor. The peculiarities of the soil at and around Lohooghat explain the mystery. On removing the sod, in some places a blue, but far more generally a deep red ferruginous clay is found to form the ground, and to this the people appeal as ocular demonstration of the legend: it owes its color to nothing else than the blood of the giants. During the rainy season, the Lohoo or "blood" river, is similarly discolored: and hence the name of the station. We find the same idea in the mountains of Lebanon, where

> ——— "Smooth Adonis, from his native rock,"
> "Ran purple to the sea, supposed with blood,
> Of Thammuz yearly wounded."

It is amusing enough to find that Banasoor was "an inhabitant householder at Sooee, paying seot and lot, and had a house on the right-hand side of the way, as you go down the Jhoom hill, just opposite the poulterers:" but to those who hold morally and metaphysically the opinions maintained geologically by Lyell and his school, viz. that forces still in operation, have produced all the exist-

ing phenomena of soeiety, the instanee of Kumaoon may be instructive also. So far as his own experience goes, the European may be a Sadducee: yet, were the popular belief to guide him, he actually breathes and lives in an atmosphere of the supernatural; a god, a ghost, an angel, a devil, a witch, lurks behind every stone and bush, and *possession* by them is a daily affair. All sickness is in fact eonsidered of diabolical origin, and an approved charm for getting rid of it and pegging down the devil, is driving a wooden pin into the ground where four ways meet, aud burying certain grains and drugs on the spot; these are speedily disinterred by the crows, who really profit on these occasions, as do the prineipals occasionally, in virtue of the force of imagination. Last year, the common Prickly Pear, Caetus Indieus, was fortunately annihilated at Almorah by myriads of a species of Coccus: but no sueh evident cause would satisfy the people: the plant withered and died under the eurse of a fukeer, who had suffered from one of its thorns. What appear to our western intelleets, the most senseless legends, are here divine, not only probable, but eertain, attested by the inspired Moonees, and perfeetly consonant with the then order of nature —no small portion of which is believed to be still in force. The grave old Pundit will fall into eestasies of admiration and approbation of the erotic exploits of Krishn, whieh in Europe, would place the god in the stocks. One feels the standards of judgment and moral approbation shaking under one's feet. Yet in practice, neither the understanding nor the conscience of the Hindoo seems to be seriously impaired by his reception of these puerilities. We may laugh at him as a spiritual Don quixote, but in the ordinary business of life, he is sensible and shrewd, and, generally speaking, as honest and moral as his judges. In the performanee of the pilgrimages and ceremonies built on his fables, he derives a satisfaction and a merit which eompensate him for the negation of philosophy. His legends would evaporate before the acid touch of Hume's famous Essay as the system of our Puseyites would fade before an honest perusal of "fiddling Conyers" free Inquiry; but Cui bono? in either case. On the ascent to Poonagiri, was a family returning from the pilgrimage; the old mother trembling and crouching along the precipitous ledges—but the sparkle of the spiritual dram was in her eye, which proclaimed her eonviction that she had just seeured her eternal happiuess. How cruel to undeceive her. "No more; where ignorance is bliss, 'tis folly to be wise."

But these legends are also his substitute for our drama, opera, romance, novel, poem and newspaper; and are probably in the long run as true and exact as the adventures and motives with which the western world is contented. It is more than likely that no such persons as Rám and Krishn ever lived, but what of that? If we analyze our own feelings we shall find that Hamlet, Falstaff, Jonathan Oldback, though utterly fictitious in event, enjoy a real presence and life in our minds and speech, while Alexander and Cæsar are little more than shadows; it was perhaps this train of thought carried beyond its legitimate limits which led the Indian writers to neglect the ordinary method of history, and adopt the spiritual romance in its stead. That the character of their heroes should exhibit what to us appear so many objectionable traits, may arise from the fact that their celestial system is so adapted to the analogies which they felt and saw in themselves and around them, that it does not recognize the existence of beings either supremely good or hopelessly bad: the former class fall occasionally like Vulcan of old into the nets of Venus, the latter, by penance, obtain the dominion of the world. There is no personification of "nature's mischief," undiluted, to be held forth as a moral beacon.

The Pauranic legends regarding Kumaoon are contained in the Manuskhand section of the Skund Poorana: Mr. Batten promises a Hindee version, which would be of much local interest: otherwise their tenor will be to the effect how this saint inherited the earth by standing on his head, or between five fires for so many years: and that he obtained the beatific vision, perhaps the magnetic trance, by a sedulous contemplation of the tip of his own nose, &c.

There is nothing peculiar in the botany of Lohooghat, except perhaps the great abundance of a lilac Primula which fringes every stream, flowering during the winter and early spring. It is equally abundant at Chumpawut and Pithorahgurh: and pretty common at Almorah: and if not P. speciosa, Wall. should be distinguished as P. rivularis. Dr. Dollard states that Ranunculus lingua flourishes luxuriantly in the low marshy vallies, and is fatal to the sheep and goats which feed on it with avidity. The plant intended was probably R. arvensis.

17th March.—From Lohooghat to Dhurgura, about 10 miles north; the road good, but narrow, and one succession of ups and downs.

Near Lohooghat, it passes through the Sooee groves of Deodar Cedars; these are extensive, and the tree has spread and perpetuated itself for ages: but neither here nor in any other portion of the province does it seem truly indigenous, being always found near temples and villages, (the oldest and finest trees by the former), and never, so far as I know, on the open mountains. Once over the Sooee heights, all appearance of undulating downs is lost, and the view resumes its usual Chaotic character; the road passes under the western face of Jhoom, which is steep and precipitous; and passes its continuation in this direction by the Kolakot ka Chheena; a little beyond which, 4 miles from Lohooghat, are the pretty hamlets of Jirkoona, perched under steep crags of dolomite, and famous for the growth of excellent ginger. To the right, Jhoom is continued to a high knob called Choomulkot, below which is a grove of Deodars called Regroo Banee, on the rounded back of a mountain, at the base of which flows the Surjoo. Passing above Barakot village, the road now reaches the Janghee-ka Kootkee, about a mile short of Dhurgura; here for several hundred yards, there is an almost perpendicular slope of grass and trees on the right, the road itself descending steeply at the same time; it was formerly a very dangerous spot, and is still not very safe: Dr. V. of the Kumaoon Battalion, fell over with his pony a few years since; he had a miraculous escape, but the pony was killed. There is a small, but welcome Bungalow of two rooms at Dhurgura, which is reckoned about 5000 feet above the sea: the Fritillaria Thomsoniana is very abundant on the Janghee ka Kootkee; and about the Bungalow, the Bauhinia parviflora, Rottlera tinctoria, Poivrea Roxburghii, Hedera æsculifolia "Gursemul," &c. mark a warm site. The Thakil mountain is just across the Surjoo; its gigantic ribs, and rocky scarps, falling steeply towards the river are very fine, and reminded me of Ben Nevis as seen from Fort William (N. B.) On its western shoulder bearing E. N. E. from Dhurgura, is the Kunthagaon Bungalow, about 500 feet lower, 8 or 9 miles distant by the road, but only 4 as the crow flies: between them is the profound glen of the Surjoo river.

In the afternoon descended to the Ramesur Bridge, 5 or 6 miles distant, a considerable portion of the route pretty steep, and near the Surjoo exceedingly so. The fact of the bridges being thrown across the narrowest part of the rivers, ensures abrupt approaches. The only

level is for a mile near a recently established hamlet called Singda about half way down. From this point there is a fine view of the junction of the Ramgunga with the Surjoo, about 2 miles above the bridge; on the right bank of the latter river there is a large patch of cultivation, above which is the small village of Ramesur: notwithstanding the name, the confluence is sacred to Muhadev, as the word is classically pronounced in Kumaoon. The inhabitants complain much of the ravages of deer, which the numerous tigers,—for which the whole neighbourhood is infamous—are unable to keep down. The elevation of Ramesur Temple is only 1587 feet above Calcutta; that of the bridge about 1500: this, with the extreme narrowness of the glen (the river occupying its entire floor) and the thick jungle, ensures a very hot, and in the rains damp and unhealthy climate; the people describe the heat as absolutely suffocating. The Surjoo is here spanned by a handsome iron suspension bridge, 59 paces (180 feet) over: the river forming at this point a deep green pool, in which as in the Kossilla at Dhikkolee, may occasionally be seen the fresh-water shark? called Gons or Gonch (a species of Silurus, Dr. Jameson informs me,) said to be of an ovate form, to have no scales, an immense head, with projecting snout, frightful rows of teeth, and corresponding voracity. It attains the length of six feet, is found up the river as far as Bagesur, as well as in the Ganges at Hurdwar. The people affirm that a man was recently attacked here by one of them. There is also in the Ramesur pool a huge boulder, called Muhadev, now about 15 feet out of the water, but wholly covered in the rains. Below the Dhurgura Bungalow, Pinus longifolia covers the mountains, and reaches to within a few hundred feet of the bridge. Sal commences 500 feet below the Bungalow, and Sauravia Nepalensis (Gogunda, Gogeena), Bauhinia Vahlii, Dalbergia Ougeinensis, Robinia macrophylla, and Hedychium coccineum in profusion, soon make their appearance.* With the Sal, and reach-

* About 15 miles higher up the Surjoo, near the Gungolee or Shera Bridge, at an elevation of 2500 feet—and a 1000 feet upward, the following plants were found.

Sauravia Nepalensis.
Leea staphylea?
Curculigo recurvata.
Wallichia Palm (Urightea, Roxb.)
Hiptage madablota.
Sabia paniculata.

ing down to the level of perhaps 3000 feet, occurs a new species of Rubia, which Mr. Edgeworth has named R. nervosa. It has round stems, sessile lanceolate leaves, and buff-colored flowers; the plant is entirely procumbent, growing on the steep banks to the length of 5 or 6 feet, with a very large root of the finest red; it exists in less quantity on the opposite bank; neither myself nor any of my people have met it except here and 15 miles higher up at the Gungolee Bridge. Nevertheless as growing by the roadside on the only high ways in the country, it is curious it should have escaped notice hitherto; the fact proves how imperfectly we are yet acquainted with the Botany of the

Boswellia? "Googgur:" leafless.
Thunbergia coccinea.
Piper sylvaticum?
Citrus Medica? "Beejoura."
Toddalia aculeata. "Kunj."
Chonemorpha macrophylla.
Pittosporum.
Uncaria pilosa.
Evonymus N. S.?
Lysionotus ternifolia (Don.) probably,
Clematis loasæfolia. 3500-4000 feet not found west of the Surjoo glen.
Laurus tomentosa? "Kupooa-kouwul."
Laurus lanceolaria. "Soon-kouwul."
Tetranthera apetala? "Gur-beejour."
Ficus lamellosa? "Gur-timla." A very shrubby sp. on the rocks along the margin of the river.
Ficus ovata? Don. "Bedoolee," and another, a lofty climber.
Bœhmeria tenacissima. "Poee," "Phoosur-puta."
B. frutescens? "Gur-tooshiara."
Bœhmeria macrophylla (Don.)
Bœhmeria platyphylla.
Bœhmeria rotundifolia. } "Gurgela."
Bœhmeria salicifolia. "Tooshiara."
Bœhmeria nervosa. "Getee."
Procris. Several species.
Blumea laciniata.
Gynura nepalensis: a very succulent shrub.
Polygonum glabrum. "Kurra."

Amongst the stones by the river side at a temporary native bridge about a mile above the Iron one, grows a small pubescent shrub, which Mr. Edgeworth thinks is a species of Rhabdia. It must be altogether submerged during the wet season:—and for as long in the dry months, exposed to the fiercest heat.

mountains, and how many novelties may exist in the uncounted glens never yet traversed by the European; the native collector is satisfied by saying (with Sheridan) he has been there. The Rubia nervosa would probably succeed in any of the hilly countries, if not in the plains of India.

From the Glaciers of Pindree and Kuphinee Messrs. Strachey brought me in May, 1847, a plant called "Roogee," the large tap-root of which is eaten by the mountaineers: it has a slight flavour of Horse-radish; it speedily perished at Almorah, but from the best examination afforded by very young and imperfect flower buds, it seemed to be a new species of Actæa. The same gentlemen also brought me from those sites abundant specimens of Primula petiolaris, nana, and another with the habit of P. denticulata, which I have also had from the Milum glacier, and which Mr. Edgeworth thinks new, and proposes to call P. densiflora: (Primula treviscapa N. S. Edgeworth from near Sooring): also a new and pretty purple Corydalis, two new Saxifrages, and Trollius pumilus. Gagea elegans is a common plant near Pindree. From specimens found in seed only, I have good reason to suppose that Trollius europæus grows between Rasrung and the cascades, on the south face of the Roopin pass, and would be found there in flower by any visiter in May and June.*

* Some of the plants collected towards Pindree in 1846, having had, in common with most of those enumerated in this paper, the advantage of Mr. Edgeworth's examination, I am enabled to state that the creeping Raspberry of p. 246, No. 176, J. A. S. is Rubus nutans. Wahlenbergia of Wachum, p. 247, is W. viridis: a specimen from a weak struggling shrub near Dooglee, not alluded to in the Journal, is probably Panax pseudo-ginseng, another approximation of the local botany to that of Gosaiusthan. In an earlier paper on the Shatool and Roopin passes (p. 16.) I have named the "Kusbul," Saussurea gossypina; but have now every reason to believe it is Mr. Edgeworth's N. S. Saussurea sacra. A slip in the nomenclature of the Compositæ is pardonable: most of these have as many names as a Spanish grandee.

Several grievous errors of punctuation having disfigured the narrative in No. 176, the following alterations are very necessary to the sense.

P. 231, l. 30. For "also found," read "not found."

246, l. 2. Insert a period after "plains," and comma after Kalaputthur.

,, last line but one. Insert period after S. E. and dele it after Khathee.

256, for 1807 read 1847.

260, l. 22. Dele the commas after "Dooglee," and "Diwalee," and insert one after "hour."

,, 2. From bottom. Put the semicolon after "Nynee Tal, &c." and dele it after "3 P. M."

March 18*th*.—To Pithoragurh, 14 miles. The ascent northwards to Kunthagaon Bungalow, is long but generally easy, the road being well lined, the Surjoo flowing, often in rapids, immediately below. To the trees enumerated on the opposite bank may be added Kydia calycina, Lantana dubia, a shrubby Procris, Gynaion vestita "Peen," Edwardsia mollis, Bassia butyracea "Chyoora," the last in great abundance, reaching the size of a large tree as high up as Kunthagaon, 4000 feet. The name probably comes from the Sanscrit *choorn* to pound, oil impregnated with the essence of flower, pounded sandal, &c.: or from *Kshood*, to bruise, to pound, whence *Kshoudru*, "honey, bee, and Michelia champaca:" but the signification Bassia is unknown to the dictionaries, as is "Phoolel," the "butter" made from the fruit to the hill people, who call it "Chyoora ka peena,"—"fat of the Bassia." The tree flowers in November, and from its blossoms and those of the "Joundela," Æchmanthera gossypina, which is in the greatest abundance about Kunthagaon, bees are supposed to make the best honey, and hence that of Pithoragurh and Dotee is in much request.

Basella alba, "Koee," "Belia-palung" is cultivated in some of the villages about Rámesur.

Approaching Kunthagaon, the road turns to the right up the glen of the Gunnik or Jameer (Citron) river, presenting the finest rock scenery in outer Kumaoon. The torrent roars at a great depth below, veiled by the most beautiful woods: the north bank rises in a splendid facade of crags, called Baroonee or Barooree, to the N. E. of which is a still loftier and very precipitous range, called Mason and Bissar, amongst the acclivities of which are two hamlets called Jak Pooran. There are several fine cascades from the precipices, which are apparently all limestone. On the south side of the glen, the road to Pithora is, for 2 or 3 miles, carried along the N. W. flank of Thakil, falling to the Gunnik in steeps and precipices by no means agreeable to the equestrian, though the road itself is good. Kunthagaon Bungalow stands on the brink of a tremendous steep, to the S. E. of which is a lofty peaked precipice from which it is named. This supports a petty village called Goguna (Sauravia:) the distance is 17 miles from Lohooghat, 10 from Pithora. Two miles from Kunthagaon is Goon or Goorna village, where the worst part of the road is over, and there is some level cultivation. About Goon, Herbert notices

a remarkable orange-colored œchreous rock, of rhomboidal cleavage, and very low specific gravity. It strongly resembles the layers observable between the basaltic strata of Antrim, and is probably a clay-slate altered by the action of trap, a vein of which comes to the surface of the mountain a few hundred feet above the village; at Rámesur Bridge Dr. McClelland states the rock to be Hornblende slate: above that it seemed to be chiefly limestone, with some slate and trap: and Kunthagaon stands on slate highly inclined. No allusion to the presence of greenstone hereabouts occurs in Captain Herbert's memoir. From Goon to Pithora the rock is chiefly clayslate: this according to Dr. McClelland forms the basis of Thakil: at Pithora, the rocks are slate and limestone, the latter generally in tabular hills: at the base of Fort Loudon there are some trap boulders, which Herbert says were only detached from the crown of the hills when the works were raised about 1815.

On the road side between Kunthagaon and Goon, the Phœnix sylvestris is to be seen in abundance, and of all heights, from a mere shrub to a tree of 30 feet: in the Sal forests of Choubhynsia, and Poonagiri, it also grows abundantly as a shrub, as well as up to 5000 feet or more at Almorah: under this aspect, it seems to be the Phœnix humilis of Royle. The steeps of Thakil towards Goon are also adorned with a profusion of the magnificent Lilium Wallichianum "Findora," growing six feet high, and producing 1, 2, and rarely 3 white blossoms, occasionally a foot in length. The Edwardsia mollis, Himálayan Laburnum, is now in full bloom in the same spots with a shrubby ashy, species of Desmodium? called "Shialee" and "Phoosur-puta," bearing yellow flowers, which I have only seen here and at Jyarec, between 3000 and 4000 feet. The Pinus longifolia covers all the lower Thakil, with here and there a Chestnut (Castanea tribuloides,) of which the zone is between 2000 and 6000 feet. A shrubby Sapium occurs near Tholee village.

Beyond Goon, the road quits the line of the Jameer and turning a little to the right, passes up a pretty cultivated glen to Thokee, a group of villages just below a low pass, on which is built one of the cairns called "Kutputya," Thokee is the point from which pilgrims generally ascend the Thakil, by a good path. A stream which rises between the two highest cimes of the mountain here tumbles down a rocky recess in a fine cascade: it is the highest source of the Jameer. The Thokee pass leads down into the vale of Thurkot, a large village with consider-

able cultivation; the acclivities of the surrounding mountains, cut down into cliffs, or rounded into rocky knolls, are covered with thickets of the "Runnel" Rhus parviflora; its leaves blighted by the late severe snows, give the glen much of the wild heathery look of the Irish and Scottish mountains. The Cratœgus crenulata, so abundant in Kalee and western Kumaoon does not grow hereabouts: the limestone may be inimical to it.

From Thurkot, the road gradually rises to the Eichoolee ka khan (one of the sources of the Jameer) on the crest of which, to the east, lies the vale of Shor, commonly known to Europeans as Pithoragurh; the name is said to be from the Sanscrit Swurg-arohun, "the ascent to heaven," one of the avatars having selected this route to return there. The station is still nearly two miles distant. The valley had an aspect strangely remote from any other in our territories, and in itself and the character of its surrounding mountains, brings Europe to our recollection more vividly than any other spot I have seen in Asia. At a rough guess it may be about 5 miles across, falling gently to the south-east, and bisected into north and south by a tabular ridge of slate, limestone, and greenstone, originating in the mountains to the N. W. and branching down to S. E. On the south-western exposure of this spur stands the station, now occupied by two companies of the Kumaoon battalion. Fort Loudon or Pithoragurh is, a few hundred yards to the west, on a mound, apparently artificially scarped, about 15 feet high, crowned by a loop-holed wall, 7 or 8 feet high, with the barbette platforms, and broken cisterns which will hold no water; on a commanding point to the N. W. there is a pepper box-kind of outwork, called Wilkiegurh. The elevation of the station above Calcutta is 5547 feet. The whole valley is prettily dotted with small villages, generally placed on eminences, and surrounded by the only trees visible, except the distant forests of Bissar and Thakil. The land is often nearly quite level for extensive tracts, and is carefully cultivated with wheat, &c. The soil is a stiff clay, which, after ploughing, requires being broken up by wooden mallets. The people do not emigrate to the Bhabur, which, with the fertility of the soil, is the cause of the abundance and cheapness of provisions compared with Lohooghat and Almorah. Flour here sells for about 30 sers the rupee, when it is only 18 at Almorah, and would be still cheaper if the Bhotiyas did not carry away much;

as for Lohooghat, the garrison and the traveller there exist on the verge of perpetual starvation; the inhabitants appear to grow little more than they require for themselves: and when the whole regiment was quartered on Eastern Kumaoon, the glaring violations of the free trade system were so frequent and extensive as to lead to constant dissatisfaction and almost open conflict between the pinched soldiery and the oppressed peasantry; affairs will now improve, as Kalee Kumaoon has but to support two companies, aided by supplies from the plains.

Each section of Shor valley has its stream: that to the south, named Chundurbhaga, flows along the south end, and, joined by the branch from the N. W. forms the Okul of the map, escaping south to the Kalee by the temple and glen of Choupukhya. The outline of the enclosing mountains is extremely bold and varied: their sides sloping and grassy in some parts, steep as walls in others. To the east is the Durge range, about 7000 feet high, connected on the N. with the remarkable summit of Dhuj, upwards of 8000 feet high, with a contour exactly similar to a section through a parapet. S. S. W. is the long ridge of Thakil, with its three summits, the northern aspects still showing a few patches of snow. To N. N. W. are the mountains over which goes the direct road to Almorah, (viz. Bans, 9 miles: Gungoleehath, 13: Nynee, 12: Punwanoula, 10: Almorah, 11,) and N. N. E. is a bold and lofty cone, the Kotesur ka Devee, but better known to the English residents as the "Drill" hill. It is reported to bear this last appellation from the tradition that in days of yore, Colonel S. S. was accustomed to punish delinquents in his regiment by ordering them to trudge, in full panoply, to the top of this mountain, their commanding officer, telescope in hand, superintending the distant penance, in his own veranda! The "Present Arms" was the signal of its accomplishment, and poor Jack, "remote, unfriended, melancholy, slow," returned to his lines a wearied and reformed man.

In this direction runs the road to Byans; the Chipula mountain, 13,500 feet high, the last ramification of the Punch Choola, closes the horizon, which has now become so hazy that the snowy range is barely visible.

About 16 miles east of Pithoragurh, the Kalee is passed by an Iron Suspension Bridge, the boundary between the British and Gorkhalee territories, where each nation has a guard. The river is said to be

there confined to a very narrow width between limestone cliffs. Dr. McClelland found precious serpentine at Goorat village, on the way down from Pithora.

The people of Shor have a general impression that the prevalence of goitre in their valley is owing to the presence of so much limestone; and one may occasionally hear a hill man object to Nynee Tal on the score of the water there being impregnated with lime. Dr. McClelland has adopted this opinion (apparently first broached by Mr. Coxe, in reference to Switzerland) and endeavours to prove by an induction of particulars, that where the springs are in limestone, the disease prevails: where in slate, that it is unknown. The evidence adduced is certainly startling, but when familiar with a whole country such as Ireland, three-fourths of which are limestone, and where goitre is unheard of, one cannot but suspect a fallacy, especially as the disease is exceedingly prevalent in some of the gneiss and mica-slate districts of Busehur. It was the fashion at one time to ascribe goitre to the use of snow water; a theory which was overthrown by the discovery that the disease was known where snow and snow-water were equally unheard of; by parity of reasoning the theory of lime-water must be relinquished, if it be proved, as I think it may, positively, that goitre affects many slate districts, and, negatively, that it is unknown in lime ones! There is not a trace of lime at Almorah, yet the malady has shown itself there in several Sepoys, natives of the plains, as well as in European children, none of whom could have had any hereditary predisposition; Dr. Dollard found the case the same at Lohooghat.

March 20th.—From Pithoraghur to the N. E. peak of Thakil mountain, which took nearly four hours. The route strikes off from the Eichoola Pass, and, crossing a range of little height by a gap with several old Sillung trees, enters the large, level, and beautifully cultivated valley of Deodar, which appears to join that of Pithora towards Choupukhya. The vista down this valley and across the Kalee far amongst the Dotee mountains, is exceedingly beautiful. One of these last, with a double head and very lofty, is called Bhaga-ling; near it is the Sheonath Quarry, affording a very hard, black-stone, in much request for millstones.

The Deodar valley crossed, the ascent commences in earnest up the N. W. side of the mountain, at first steep, rocky, and inaccessible to a

pony, but afterwards more gentle. The only plants in flower were Saxifraga ciliata, Gentiana marginata, and Primula denticulata, the last high up, in wonderful profusion and perfection. In the upper 1500 or 2000 feet, large meadows occur of the tall hairy grass called "Salim," Rhaphis Royleana, common also on the Gagur, Binsur, Bhutkot, &c.; it is considered the best material in the mountains for thatching, a comparatively thin layer of it, especially if used when fresh cut, being said to exclude water perfectly. My people fired these meadows in several places, when it was surprising to observe the rapidity with which "the tongue of fire" licked up the tall bending culms, and speedily enveloped the mountain side in a mass of flame eating its way down and against the wind as well as up and with it. The amusement was safe up here, but lower down might be fatal; it is only a few years ago that a party of eight or ten fiddlers (meerasees) on their way to Pithoragurh were overtaken on the high road between Goong and Thokee, and suffocated to a man. In addition to the accidental friction of bamboos, &c. the mountainers believe that these fires are sometimes let by the sparks elicited by falling masses of rock, Arundinella hirsuta is a very common grass on the S. face of the mountain from 6000 to 7000 feet. The ash-leaved Berberry, Berberis, (Mahonia) Nepalensis "Pande-Kilmora," or "Chotra," is a common shrub on the upper Thakil: and, in the woods as well as on the open downs, various species of Cherayuta spring up in abundance, as if nature had here opened a druggist's shop for the cure of the fevers which her agency induces in the Turaee below; a dualism of operation which reminds us of the experiment recorded by Dr. Braid, who, magnetizing the organ of philoprogenitiveness on one, and that of destructiveness on the other side of a young lady's head, was embraced by her with one hand, but knocked down with the other. For an effectual cure of "life's fitful fever" itself, the mighty mother despatches us to the limits of perpetual snow, where she produces her aconite, and sweetens its root as an earthly mother does the medicine for her children; if, with Macbeth, you "gin to be aweary of the sun," as well you may in India, swallow but a small dose of this, and

> ——— "Nor steel nor poison,
> Malice domestic, foreign levy, *nothing*
> Can touch you farther."

But the glory of the Thakil mountain is its Palm, Chamærops Martiana, to which it is also indebted for its name; it eommenees at about 6500 feet, but reaches its perfection in numbers and size towards the summit, where, at about 7800 feet, it oeeurs, ehiefly on the N. W. aspect in elusters and lines, growing from 20 to 30 feet high, with a superb erown of dark fan-shaped leaves, rattling loudly to the breeze. To the Anglo-Indian, who associates the Palm with heat, sea, and level plains, it is startling to meet one thus, growing on the mountains above the Pines; with, and actually above, the Holly, Maple, Oak, Yew, with beds of Primula at its foot; it is in botany what in zoology would be the lamb and the lion feeding together. The faet, however, has its parellel in America, where in about 4° north, on the Andes of Quindiu and Tolima, Humboldt discovered the Ceroxylon Andieola at from 5800 to 9500 feet elevation. "The association," says this illustrious traveller and philosopher, "of Palms and Coniferæ whieh we have noticed in the eoal measures continues through all the suceeeding formations, until far into the tertiary period. In the present day, it may almost be said that these families avoid each other's presenee." Yet he states that on the western slope of Mexico, Corypha dulcis is mixed up in forests of Pinus Oeeidentalis. At Dwarahat, elevated 5000 feet above the sea, Phœnix sylvestris flourishes as a large tree, with Pinus longifolia all around. Baron Humboldt, no doubt from the imperfeetion of his materials, appears to have had an inadequate idea of the Himálayan palms: he says (Cosmos) "scarcely is a single palm-tree found so far north as the beautiful vallies of Kumaoon and Nepal." Yet Dr. Griffith enumerates Licuala peltata, Wallichia oblongifolia, Areea gracilis, and several more, as natives of the Darjeeling mountains; others will probably be added to the list whenever the great belt of richly wooded mountains thenee to Kumaoon, has been explored; just now, it is not better known than Timbuctoo. Dr. Griffith distinguished Chamærops Martiana by its superior stature and yellow fruit from Chamærops Khasyana, which he deseribes as a low tree, with blue fruit. The last is that of the Thakil Palm, but the stature of the trees fully equals his measure of Ch. Martiana. If the eolor of the fruit be taken as the test, we have here this second speeies of palm, adorning a range 8000 feet above the level of the sea; 4000 feet lower, Phœnix sylvestris is in abundance; while, at the base of the mountain, the hot, but

shady dell of the Surjoo is in many places a thicket of the Wallichia oblongifolia, which has been traced from Bumouree to Assam.

Linnæus classed the Palms as the "Principes," of the vegetable kingdom, and with all subsequent Botanists, places them near the grasses: it is not a little interesting, then, to find that, perhaps before Sweden emerged from the waves of the sea, the Indian writers had designated the Palm, "Droomeshwur,"—Sovereign of trees, and "Trinraj," King of the grasses: (Borassus flabelliformis.)

There are some trees of Mesua ferrea, Nagkeshwur, in Dotee opposite to Askot; the people, with botanical rivalry, boast that Kumaoon has none, which is true enough. The Gorkhas tell me that the *Chilounia*, Gordonia integrifolia, is abundant in the mountains to Thansen (Palpa,) but no farther towards the N. W.

The Thakil mountain is generally, in Shor, known as the Thulkedar, which one might be inclined to refer to the growth of the Palm, Tul or Tal; but the word really comes from its Sanscrit name, Sthul-kedar, "the station mountain," or "place of the sign," from a not very remarkable temple of Muhadev, which crowns the N. E summit. The ridge here is composed of crags of a compact reddish-purple dolomitic limestone, which indeed forms the whole upper mass of the mountains; in the main summit, about a mile to S. W. this rock is of a pale blue color, distinctly stratified: the beds flush with the surface, and only supporting a scanty vegetation of grass and Gentians; the strata seem to dip here to the S. E. and on the S. W. prolongation of the mountain, crop out in precipitous tiers, in one locality greatly contorted. At the temple the dip of the strata seemed north or N. E.: the whole mass is pervaded by layers of chert, or hornstone, as Herbert calls it, which resist decomposition much longer than itself, and project in bevelled cornices; as in the limestone of Shalee mountain near Simla. Between the hut and the main summit there is a mine of very compact steatite, of a much better description than that in the dolomite of the Ladder Hill above Bagesur. The loftiest point of Thakil is 8221 feet above Calcutta; between it and the temple is a *col*, perhaps 400 feet deep, in which, sheltered by some fine oaks (Quercus dilatata,) Major Drummond has a shooting hut, which saves the labour of bringing up tents. The abundance of wood and grass in the mountains affords great facilities for the construction of these

accommodations; the people of Shor are also peculiarly skilful in the manufacture of mats, chiks, baskets, &c., from the Nigala Bamboo, which grows copiously on Thakil.

The Thakil mountain is an enormous mass, perhaps not less than sixty miles in circuit at the base, and, towards the summits, affording ample scope, at good levels, for extended roads and paths. Each of the summits sends down a huge buttress to the S. E. between which lies a broad, undulating valley, with Burabagh village on its north side. Still lower, in the district called Goomdes, is the confluence of the Surjoo and Kalee at Puchesur, a spot sacred indeed, and celebrated amongst fishermen for its Muhaseer, but so hot and narrow as to be uninhabitable. To the west, the main range is continued towards Goong, in another great spur, expanded near its origin, into broad wooded knolls, and then changing into a very narrow rocky ridge, with grassy, but extremely steep shelves to the south. This stretches to Kunthagaon, but above Goong is broken by a deep neck, the Lutkhola Binaik, the upper flank of which turned out so steep as on the 21st to force us down on Goong by a secondary ridge, itself sufficiently steep, and slippery from the dry grass and pine-leaves, to ensure repeated falls.

The haze which now shrouded Kumaoon barely enabled me to judge what the view from the Thakil must be with a transparent atmosphere; even the natives, not often enthusiastic on this point, speak of it with admiration, and tell how, in the rains, it includes a mighty expanse of the Rohilkhund plains, with all the exterior, the central, and the culminating ranges of the multitudinous Himálaya, seen from this Mercury station with all the advantage and pride that a General reviews his long line or massive columns of holy bayonets, glittering sabres, and clouded artillery.

The Thakil crags and forests are a favorite haunt of the wild Boar, Bear, Ghorul, Jurao, Kakur, also known as Rutwa, and other deer. The wild dog pays the mountain occasional visits, and has been seen by Major Drummond forming a regular semicircle about its prey, a female Jurao with her young; and, on an evidently concerted and well understood signal, starting after them in full cry. Amongst the oak woods I noticed flocks of a large pigeon much resembling in size and color the English woodquest; they are called Bujewa and Lekhwal, and appear to be the Columba Palumbus of Dr. McClelland; the wings are of a slate color, barred with white: the breast, purple or

piece-colored, the back of the neck, brownish. Their food is the acorn of Quercus incana, which is equally relished by bear and *langoor;* they are common in Kumaoon at similar elevations. The Alpine Lammergeyer (Gypaetos barbatus) "whose happy flight is highest into heaven," soars majestically along the precipices; its Kumaoon name is Reeshee, and the people here and in Gurhwal generally identify it with the Guroor or Bird of Vishnoo; it probably is the primitive "vehicle" of the god; but at Budreenath, Guroor is represented by a winged boy, a Himalayan Ganymede.

March 25th.—From Lohooghat to Furka, 9 miles: road good, at about 4 miles passing immediately below Kotulgurh or Fort Hastings, to the south, and perhaps 600 feet lower. The elevation of the fort above Calcutta is 6327 feet; it occupies a steep knoll, 150 to 200 feet above the general level of the mountain, separated by a deep neck from a plateau to E. N. E., on which stood an outpost called Rounj, from which Kotulgurh could be easily battered. The area comprises a tract about eighty yards from N. to S. and twelve or fourteen from east to west: surrounded by a good stone wall eight to ten feet high, and five thick. The gate is on the E. N. E. side: and there is a postern at the N. W. angle. There is a deep reservoir, but no water in the place; the nearest supply is under Rounj to the S. E. a mile distant: there is also a small spring to the west; were the reservoir water-tight, and filled, the position, though somewhat open to escalade, would be rather a strong one; except from the east, the approaches are extremely steep. The garrison consists of a Naick and four Sipahees, retained simply to protect some spare timber, &c.; as the spot affords no supplies they depart daily to Lohooghat for their dinner, and assured me that the stronghold of Banasoor takes very good care of itself; it is destined to be dismantled shortly. The place was intended to command the very pretty and extensively cultivated valley of Bisoong, which, with its groups of villages and clumps of trees lies below to the south and west. In the fields Papaver glabrum, Tulipa stellata, Ranunculus arvensis, and Lotus corniculatus by the streams, are very abundant, the first two and the last now in full bloom. A gentle ascent leads to the head of the glen at a fine Deodar wood, sacred to Dernath Devee. Here the slate rocks change to granite, which continues to Furka, mostly in a state of complete disintegration. Hence

the road generally keeps to the summit of the ridge, from which the ground slopes easily to the south, forming a series of open vallies, beyond and parallel to which rises the Sidh ka Dhoora range and Chulouu summit, about 4 miles S. of Furka, covered with Quercus dilatata, which also occurs at Furka and along the road side, especially a large grove at Dana near Dernath: descending hereabouts to 5800 feet, probably its lowest level a mile beyond Dana is Lullia, a ruined temple, with the usual cedars: here a large treasure is reported to have been discovered. Furka Bungalow is above a mile on, and here is another and very beautiful cedar wood. The elevation is 5827 feet above Calcutta: there are many villages scattered over the neighbouring dales, the nearest of which are Maragaon and Kumlekh. The inhabitants are all still in the Turaee, and I visited several of the hamlets without meeting or seeing a single person: all the doors locked, and the crops apparently uncared for, but luxuriant: one is at a loss to know how they escape the deer. Much rice is grown in the swampy bottoms: the streams join the Ludheea at Kela Ghat.

March 26.—13 miles to Devee-dhoora, the Deo Dhoora of the map, often known as Dé simply: road good but tortuous, following the tabular and rounded summit of the granitic range; this is well grown with Rhododendron, Cheer Pine, Pear, Kaephul (Myrica sapida), and Banj oak which with its young hoary leaves well justifies the epithet *incana*. Those of Quercus dilatata are now of a beautiful glossy brownish yellow and pink; but though the mountains are loftier than towards Furka, this species does not occur on to-day's route. The road descends at once from Furka Bungalow for $1\frac{1}{2}$ mile and then ascends as much to the temple of Eiree and Ahree Deotah, with the village Guhtora below to the north. Ahree is one of the most popular of the minor and probably aborigiual gods of the mountaineers, such as Symdeo, Nagnath, Hurroo (Hurjoo, or Mahumbulee,) &c, whose rustic shrines are met in every grove and on every summit; they are now considered to be men of the Golden age, deified for their many virtues and powers, and so far answer to the classical dæmons of the Greeks as defined by Hesiod. The *Dies Iræ*, some time in October, is kept as a fair, and is celebrated with feasting and dancing: during the revelry, the demi-god, aided by bhang and churrus,* seizes and takes possession of one

* Intoxicating products of hemp, Cannabis Sativa.

of the party, who, half drunk, half inspired, and wholly mad from excitement, is supposed to acquire the gift of prophecy, the power of revealing the place and agent of stolen goods, the seat, cause, and cure of diseases, &c. Ahree, a mighty hunter, armed with bows and arrows of steel, presides over ordeals, and it is said that an oath taken in his name is held in great reverence. The true name of the peak near Somesur, called Ihooee Deo in the map is Ahree Deo: Raee peak in Gungolee is also sacred to this hero. At the 6th mile from Furka, the road passes a cedar grove and shrine called Patee Jounlaree, with the village and valley of Keemwaree to the south; the soil is undulating, but apparently poor, consisting of granitic detritus. The streams in this direction from the heads of the Ludhcea; between the two main branches, in the Dhyanee Rao purgunna, are the Nai iron-mines considered the best in Kumaoou; apparently the "Muglig" of Herbert: the ore is magnetic. At 4 miles from Deo Dhoora, the road descends to a deep col called Gursa Lekh, with the village Goom Gursaree below to the left: hence there is a considerable ascent to Deo Dhoora, 6867 feet above Calcutta, a remarkable spot, where on the N. W. face of the mountain, a few feet below its crest, there are two groups of colossal blocks of gray granite, piled ou each other in the Titanic style proper to the rock, consecrated to Muhadeva, Devee, Bheemsingh, and softened by a few picturesque cedars, oaks, walnuts, and a large Sillung tree. Similar boulders are strewed over the surface of the surrounding mountains, especially on the upper part of the deep depression in the range, immediately north. Between two of the main boulders, in a Druidic recess, is the temple of Muhadev, and the place of sacrifice, where, as at Poonagiri and hundreds of other Indian fanes, innumerable goats and buffaloes are yearly offered, to the confusion of archbishop Magee and his sect. Neither of these rocks is probably much under fifty feet in height. A little to the west are two other boulders, the uppermost of which called Runsila, about one hundred feet in length is cleft right through the centre by a deep fresh-looking fissure: at right angles to which there is a similar rift in the lower rock. On Runsila rests a smaller boulder, said to be the same that was employed by Bheemsingh to produce these fissures, in proof of which the print of his five fingers is still pointed out, just as at Rephidim the twelve sources whence the water gushed from a similar mass are exhibited to the credulity and the

kisses of the faithful. The surface of Runsila also presents certain other marks and diagrams, on which the gods amused themselves at whist, pucheesee, &c. Both boulders and fissures are indeed sufficiently extraordinary to warrant some superstitious legends in an ignorant population. Humboldt adopts the opinion of Von Buch that these wildernesses of granitic boulders, as well as the fissures, originated in "a contraction of the distended surface of the granitic when first upheaved." McCulluch, Herbert, &c., seem more inclined to attribute the boulders to the existence of hard and highly crystallized nuclei, which have resisted the decomposition going on all around, caused probably by the action of water on the superabundant felspar. Many of the boulders are also perishing, but somewhat differently; large and thick concentric coats scale away, and crumble, by the process which Herbert terms, "desquamation," which is equally remarkable in the trap rocks. The fissures appear to be too fresh and sharp to allow of the supposition that they are coeval with the elevation of the rock: they are probably due to the unequal cooling of the mass when a frosty night has succeeded a very hot day.

This granitic ridge extends continuously from Dernath near Fort Hastings to Sour Phutka, within three miles of Dol; Herbert's map gives a wrong idea of its area by a single patch only: at Sour Phutka the road leaves it, but the formation is probably continues to Syahee Devee, as the granite re-appears on the west and south faces of Bandunee and Motesur mountains; in the bed of the small stream which joins the Koomnia below Peorah, and on both sides of the Koomnia up to Kupleshwur. In this great outburnt of granite in central Kumaoon, and the equally important one of greenstone along the line of the Gagur, we are probably to seek the true origin of the curious reversal of the dip by which the gneiss and mica slates of the snowy range have been brought to rise towards the plains. We may suppose that the primitive eruption of the granite in the snowy range originally raised them more or less parallel to itself: and that the subsequent outburst in central and outer Kumaoon, forced out laterally by the resistence of the main range, tilted up their inferior edges into the extraordinary position in which we now see them: (T. E. S.). Isolated instances of the original dip remain to countenance this view: thus Binsur and Jagessur mountains are composed of gneiss and mica slate in highly in-

clined strata dipping from S. S. W. to S. S. E., and crossing out on the north face of the mountain in steep precipices facing those of the Khurci limestone across the Recthagar, of which the dip is N. 60° E. The lever at Binsur was apparently an eruption of syenite, which has reached the surface at the gorge of the temple. Eruptive rocks seem in fact to abound all over the province: Major T. E. Sampson detected a great outburst of trap near Chandpoor, south of Kuruprag, on the route from Almorah to Budreenath: at Dhamus, on the declivity of Siyahee Devee, a dyke of greenstone, about one hundred yards across, separates the mica slate from the granite, which there forms the upper part of the mountains. It is rapidly disintegrating, and is arranged in concentric layers of very considerable diameter, each with a hard spherical nucleus: numbers of these lie about, exfoliating more slowly, and forming those natural boulders so abundant and troublesome on the trap plateaus of central India: the operation of fire thus operating as water does in the case of river boulders. Strewed on the surface of this dyke there are many cuboidal masses of an extremely hard and sonorous black hornblende rock, from which the spot is known as Kala-putthur and Tipooria Putthur "The Peeling stones."*

There is no village at Deo Dhoora, but the Poojaree, an importunate beggar, has a respectable house, about which there is a collection of slated huts, for the convenience of the many pilgrims who assemble to celebrate the annal fair in September. On this occasion it is or was the custom for the people to form into parties which fought with sticks and stones, with a not unfrequently fatal result, and all in honor of the presiding goddess. Such combats answer in society the part of Cowper's "animated No" in conversation; and in this case were doubtless the escapes and safety valves of the spirit of litigation for which the people of Kumaoon are noted. It seems to be in truth almost their only serious defect, and no where does one more frequently hear complaints of the meshes of the law: "Jal-sazee." This state of things is an unavoidable result of the law of inheritance, which allows the sons "share and share alike" of the father's property; so that

* I observe that Dr. Royle confounds Wangtoo Bridge in Kunawur with Whartoo (Huttoo) near Simlah: the latter mountain is gneiss; but at Wangtoo, the Sutluj has cut its way through a mass of the hardest *granite*.

houses and lands are divided ad infinitum into the most intricate multiplicity of parcels, so small as scarcely to afford a livelihood to the owner, and yet absolutely, necessary to his existence; emigration being precluded on the one hand by the snows, on the other by the heats of the plains. The result is shown in the extreme anxiety of numbers to obtain employment under Government or with residents of the province, as well as in the amount of litigation and heart-burning concerning boundaries and succession; yet so pacific and honest are the inhabitants generally, that one travels almost for months without meeting police of any kind, their democratic institutions as to property going hand in hand with the most absolute principles of monarchy and implicit obedience. Instead of shooting their landlord, the custom in Tipperary, they merely file a suit against him: it is difficult to meet one who has not some little affair of this kind on hand. The right of primogeniture is only acknowledged to the extent of perhaps a cow, or the most auspiciously situated tract of land, being given to the eldest son:—daughters appear to get nothing beyond a husband.

Deo Dhoora occupies the N. E. and highest angle of a great granitic plateau, steep on the east and north, but sloping gently to the west and south: it is covered with wood, and furrowed by deep ravines. One of these commences at the shrine, and soon collects a pretty stream, deeply shaded by horse-chestnut and other trees: at its head is a Noula or covered well, now in process of repair; the artificers of Kumaoon being all of the outcasts called Dooms or Doomras, no Brahman, Rajpoot, or man of any good caste will touch the water till the well has been carefully purified by sacrifice and prayers. None of this proscribed race dare openly to drink of a well appropriated to the privileged classes: nor, under the native Governments were they allowed to build temples, to have marriage processions, to mark themselves with the teeka, all of which they now practise with impunity: and they may console themselves for their exclusion from the springs by the fact that at Almorah the Christians and Musalmans are in precisely the same humiliating category. Against these Helots it may be justly charged indeed that they are in their food, persons, and habitations, disgustingly filthy: scarcely anything comes amiss to them, and they appear indifferent as to whether themselves or disease have the killing of their meat; fowls, pigs, cows, being equally acceptable. They have

even different deities from the Hindus, who merely bestow a faint recognition of respect on passing these Dii minorum gentium. The chief of these is called "Nurungkar"—"the maker of men," to whom they offer hogs, fowls, and other unclean things, a practice which may indicate a connection with the non-Hindoo races of the mountains and forests of India. They also hold the demigods Hurroo, Sym, &c. in great veneration. A common tradition relates that the Dooms once gained the mastery of the province, and established a *leather* coinage: Æsop's fable in operation! The view from Deo Dhoora is celebrated as being one of the finest in Kumaoon: it includes Thakil, Jhoom, Binsur, and a host of nameless ranges to the west and south; the snows were but dimly visible through the haze which has set in unusually early this season, and, while it lasts is a most effectual "*Burke* on the sublime and beautiful." Its origin is disputed; some consider it to be fine dust blown up from the plains, the winds restoring to the mountains what the waters have carried away, or a portion of it: but having observed that the atmosphere is little if at all cleared by heavy falls of rain at this season, I should say it was more justly considered to be aqueous vapor, in the state which Professor Forbes calls "dry haze." Early in August 1847, after a very wet July, which (to adopt a conceit of the Edda), must have converted the *dust* of Hindoosthan into its brother, *mud*, the haze returned as dense as before, so as to obscure every object beyond a range of four or five miles. The ordinary termination of this Egyptian darkness is the commencement of the wet season, the intensity of the vapor, whatever it consist of, increasing up to that period.

Deo Dhoora, 6800 feet, is the highest, Kupkot on the Surjoo, 3400 feet above the sea-line, the lowest level at which I have observed the Silung; flourishing, however, at both points, so that its limits may safely be extended a thousand feet more in each direction. Mr. Edgeworth thinks it is Olea acuminata var. longifolia: and the Almorah Pundits inform me that it is the Shileendruh of the Sanscrit scriptures. H. H. Wilson merely defines the word "a sort of tree," and does not give the etymology, which seems to infer "holding a stone," or "firm in stones;" in allusion either to its druped fruit, or to the stone seats which are usually built about its base, for the accommodation of the Himálayan Wittenagemotes.

A few hundred yards down the S. W. glen here, we also find the pretty and interesting twiner, Gardnera ovata; also growing in similar localities on Siyahee Devee, near Almorah: the people are little acquainted with the shrub, which seems not common, and term it, "Bunjahee," or wild Jessamine. Having examined numerous specimens in flower and fruit, the Kumaoon plant I should say combines the characters of Dr. Wallich's two species, G. ovata and angustifolia, but differs from each in having a two-celled berry, with *two* seeds in each cell.

The pretty little Geranium bicolor (Royle) now in full bloom, is abundant at Deo Dhoora.

27th March.—To Dol Bungalow, 17 miles, a distance which to the solitary traveller, appears so long, that he is apt to enquire with Paddy uncoiling the rope, whether some one have not cut the end off. Last evening, about 7 o'clock, a tremendous storm of lightning, thunder, wind and rain, from the west, burst on Deo Dhoora, and seemed for a while as if it would annihilate the everlasting mountains. The flashes of lightning were constant and most vivid for about an hour; and the rattling peals and roaring of the thunder, reverberated from a thousand points, were terribly sublime. The rain continued all night, and several smart showers fell during the day, with most boisterous and English-like gales, veering from W. to S. E.: the scudding clouds adding a thousand fresh tints and changes to the nearer scenery, but all beyond was as obscure as ever.

On quitting Deo Dhoora Bungalow, there is a steep descent of 1200 —1500 feet to the Kotahgar, the central feeder of the Ludheea, and the boundary between Kalee Kumaoon and Almorah. A large village, Waree, is seen far down on its banks; about this spot, Cœlogyne prœcox will be found on the trees, blooming in November. One of the sources of the Punar, which is apparently the true Kotagar, a large affluent of the Surjoo, rises in the same depression, and affords a path down towards Doongra, another considerable village. Hence the route asceuds gradually and for a long way, the opposite side of the *Col*, the summit of which is called the Berchoola, along which it undulates, winding terribly, to Dol. The scenery is beautiful, and must be grand indeed when crowned by the snowy range. The mountains are heavily wooded with Quercus incana and dilatata, Rhododendron, Andromeda, Millingtonia pungens, Photinia dubia, Myrica sapida,

Carpinus viminea, Betula cylindrostachya, Evonymus japonica, Eurya acuminata, and the level is high enough for Primula denticulata and an occasional yew, denoting a greater elevation than that of Deo Dhoora: though this northern tree descends occasionally in Kumaoon as low as 6000 feet. The thickest and most luxuriant woods are on the northern aspects, which are exceedingly steep along this range, where the poor granitic soil is covered by a deep layer of black mould. Cupressus torulosa, under the name of Rai-sulla is reported to occur on the southern declevities.

At perhaps seven miles the road passes Puya Panee, "cherry tree water," a lofty, and to-day a cold bleak spot, the head of the Ludheea river. At three miles short of Dol, the route decends to a second *Col*, called Sour Phutka, the Sarput ka dhoora of Herbert: there are pools of bad water here, and the people of Salim are clearing large tracts of the mountain forest for wheat and barley: such land is called "Ijur," and being often temporarily abandoned after two or three years' cultivation, produces the erroneous impression that the agriculture of the province is retrograding, more disagreeable settlers than those from Salim, are not unfrequently met, in the feline form, on the route between Sour Phutka and Devee Dhoora; but they rarely approach much nearer to Almorah.

At Sour Phutka, the granite rock ceases, and is succeeded by the stratified rocks quartzose, micaceous, and slaty, dipping north. About Dol, these are completely established, with abundance of the black graphite slate, so common on Kaleemuth, Bandunee Devee, &c.; the presence of this may probably be connected with the neighbourhood of the granite.

A mile beyond Sour Phutka, the road passes an exteusive wilderness of vast angular gneiss fragments: perched on the top of a group of these is a rudely conical mass of the same material, 20—30 feet wide at the base, and fully 50 feet high: it is called Nagdeo, and seems to be revered as a phallus: the foundations of old buildings are visible around. A rivulet, one of the heads of the Punar, rises a little way down, between these boulders and the high road; following this for a mile, we come on a small and exceedingly pretty secluded dell, shaded by cedars, horse-chestnuts, and Tilonj oaks, with a faue sacred to Vishnoo, and several houses, untenanted at present. A path leads

hence direct to Dol, situated in the Murhoree Putee, which includes Peorah, and belongs to Kedarnath temple.

Dol is a petty hamlet on the spur below the bungalow; still farther down, in the various glens to the east, are scattered the villages of Salim, celebrated for its excellent rice. A little north of the bungalow, rises the eastern branch of the Koomnia river, with the road to Almorah, on its right or eastern bank; 3 coss from this, at the junction of the S. E. or main branch, stands the rather famous shrine of Kupleshwur, with a large temple of Muhadev, built by Oodiot Chund, son of Baj Buhadoor, on the north bank at the exact spot where Kupila Moonee did penance in days of yore, kept in countenance, across the junction, by no less a personage than Seshnag, the serpent king, who was similarly engaged. There is scarcely a confluence of two streams in the mountains, where, for a recondite reason, Muhadev is not worshipped. The present site is a narrow Piue-clad glen, just at the end of the cultivated lands; a mile lower down, the Koomnia forces its way amidst great smooth boulders of granite, the debris of the mountains above; here, on its south bank, facing Roulakot, is a huge outburst of granitic masses, piled one over another to the height of 150 feet; the highest and most external, shaped like the beak of an anvil, is known as the Birdeo. The place is about four miles from Choumoo village, near Dheeakot, between Almorah and Peorah. Placed thus at the fountains of water, Dol also merits a temple to the winds, which blow here so generally and strongly that one is tempted to believe an enemy must have sown the Hornbook of storms under the foundations. A Buniya presides here over a temple of Ceres, in which the worshippers are earnest and numerous.

28*th March.*—To Almorah, 15 miles: the first 9 pretty level, and then a dip of 2500 feet from Bandunee Devee to the Suwul river, and a rise of 1500, by a bad, rocky, warm road, to Almorah. About six miles from Dol, leave that village, a little to the south, 6200 feet above Calcutta; soon afterwards Almorah comes into view from the pass called Goona Panee, by which we enter on the north face of Bandunee Devee mountain, and lose sight of Kana Deo, Jhoom, and Thakil. Fifteen or twenty years since, all this was thick forest, but the hewers of wood from Almorah have now left little beyond some scrubby oak, Dul (Cedrela serrata) Rhus semialata, an unknown olea with very bitter

leaf, with a copious brushwood of Elsholtzia polystachya, Berberis aristata, Deutzia Brunoniana, Spiræa, Symplocos, Clematis montana, and a new species of Xanthoxylon, (tomentosum, Edgeworth,) called "Seemoor," which grows here and on Boodha Jagesur, in profusion: the whole in autumn closely matted with the odoriferous cuscuta grandiflora, and the ground covered with wild Thyme, Chirayuta, &c. About a village called Rurown, north of the road, occurs the yellow-flowering Artemisia vestita, called "Deopatee," from its superior fragrance; it is a common plant in Joobul, towards the Choor mountain.

The road passes from 200—300 feet below the Bandunee summit, which, seen as a peak from some points, consists really of a level oblong area, 150 to 200 yards by 20 to 30; it is 6800 feet above Calcutta, and with its oaks, is consecrated by a temple of Devee, in front of which is one of those tabular stone altars on four low pillars, called *Choukootiya* in Kumaoon; they closely resemble the Druidical cromlechs, and are used for the sacrifice of goats, the deposit of flowers, &c.: nor will any Shikaree pass a shrine of this sort without some small propitiation to the Indian Diana to send him game and good luck.*

The view over Kumaoon from the Gagur to the snows is exceedingly fine from Bandunee Devee, and Almorah town is hence seen to the greatest advantage. During the rainy season, the phenomena of diverging rays opposite to the place of the sun may commonly be witnessed of an afternoon towards this mountain. According to Professor Forbes, writing of the shadows of clouds, mountains, &c., projected to a great distance in the air, and rendered visible by its imperfect transparency, "the diverging rays so often seen proceeding from the sun, when near setting, are of this kind: and the corresponding fact of rays (or clear intervals between the shadows of clouds), which appear to

* The coppice and ravines of Bandunee, and onwards, are favorite haunts of bears: the people report that as many as nine have been shot hereabouts in one day by a party of officers. A doubt seems still to be entertained whether the bear be carnivorous: but unless I am mistaken, Captain Henry Ramsay of Gurwul has *seen* them feeding on a Jurao. As long ago as the second century B. C., we find the same affirmative fact familiar to the Syrians: "And behold another beast, second, like to a bear, * * * and it had three ribs in the mouth of it, between the teeth of it, and they said thus unto it, Arise, *devour much flesh.*" Daniel vii. 5.

Eight hundred years earlier David tells King Saul: "There came a lion and a *bear*, and took a lamb out of the flock. 1 Sam. xvii. 34.

converge to a point diametrically opposite to the sun. This rarer phenomenon we have twice seen." These, and the haloes so common in the mountains are the original "glories," of Hindoo and Catholic gods and saints.

Descending to the Suwul river, so named from a village a few miles up, we pass it, at 3927 feet elevation (R. S.) by an iron suspension bridge, called Bisheshur, from an adjacent temple placed at the confluence of a brook from the Huree Doongra. At this bridge of Sighs, the Hindoo dead of Almorah, are first reduced to ashes and then committed to the stream in the hope of their being finally mingled with the holy water of the Ganges, and the ultimate prospect of adding to the extent and the fertility of Bengal: a nobler futurity than the stopping the bung-hole, &c., which Hamlet contemplates as the fate of Alexander and Cæsar. The Hindoo does not, however, believe that this is all: the spirits of the deceased, going neither to heaven nor to hell, remain lurking about Bisheshwur, where they are occasionally seen by the "belated peasant," celebrating orgies like those revealed to Tam O'Shanter, except that matchless Satan is unknown here; at other times, under the guidance of one Bholanath, on horses, dandees, or foot, they promenade through Almorah with lingering visits to the spots most loved when they were in the flesh—the Buniya's shops. It is not considered either safe or fortunate to meet or even see any of these immaterial pageants, and death is supposed often to follow shortly. Those, however, who survive, affirm, or are believed to affirm, that very many of these ghosts are deficient in one or more members: one has no head, another no feet, and so on, and yet they manage to dance, speak, &c., as well as the rest. This is considered a great wonder: but I explained to my informant that a still greater wonder remained, which was, that after all their members had been dispersed by the elements, any of them should possess head, feet, or any thing else: a difficulty he admitted, but not sufficient to cancel the experience of centuries and of a whole nation.

The following details belong to another excursion.

8th May, 1847.—From Almorah, viâ Hawulbagh to Somesur, 12 coss, about 18 miles. The road is good, and beyond Hawulbagh keeps along the west or right bank of the Kosilla, passing, beyond the latter place, under spacious cultivated plateaus. The scenery during the

march is always pretty and frequently eminently beautiful, especially the vistas up the lateral vallies. The river winds greatly, sometimes abruptly, flowing in rocky beds, or over broad stony channels; the banks are fringed with willow, Quercus incana, and annulata, Ilex excelsa, Nerium odorum, Photinia dubia, Rosa Brunonii, and most luxuriant Pomegranate trees; the last four are now in full bloom; the Photinia one mass of Hawthorn-like flowers. The upper portions of the mountains are covered with Cheer: lower down, the cultivation is pretty general. About three miles short of Somesur, on the left bank of the river, immediately under the furrowed side of Gunnanath, there is a long tract of rich and very level ground, covered with the finest wheat, now nearly ripe; it is called Soopeh Kot, and is continued to and above Somesur, which is placed in the fork of the Kossilla, and Salee or Salmulee rivers, in one of the richest and most lovely vallies of the Himálaya. The elevation is probably 4700 feet above Calcutta, which ensures a warm climate and myriads of flies at this season; Baalzebub, their king, certainly keeps his court here: the spot however is sacred to Muhadev, as "master of the Moon." His temple stands between two fine deodars, outside which are many shady walnut trees, under which we encamped. The district comprizes 50 to 60 villages, the revenue of which is about 4000 rupees: but many Bráhmans are settled, or have possessions hereabouts, whose property is rent-free.

Somesur probably owes its sanctity to the junction here of two other streams with the Kossilla, viz., the Salee from the west, and the Munsaree Roul from the east. The last rises on the N. E. side of Gunnanath, in the pass called Giri-chheena, which separates the affluents of the Kossilla from those of the Surjoo, and affords a route from Bagesur to Somesur, much frequented by the Bhotiyas on their way to Chilkiya. The lower part of this vale is also finely cultivated. The Giri-chheena pass and that of the "Ladder Hill," between Almorah and Bagesur are in the same range.

The rocks between Hawulbagh and Somesur, are chiefly clayslate, in highly inclined strata, transverse to the course of the river, and dipping south: through these the river has excavated deep gorges. On the right bank, there are two or three partial outbursts of granite; about Somesur, the rock is chiefly quartzose, in vertical strata; with red and dove-colored clayslate; higher up the glen there is a quarry of blackish

chlorite slate, near which dykes of decomposing greenstone appear; about Lodh, the rock is granular quartz.

The priests of Somesur possess a sunud engraved on copper, of which the following is a translation: a copy of the original is appended, interesting in its exhibition of the patois spoken at the court of Almorah three centuries ago: both are by my friend and fellow-traveller, Major T. E. Sampson.

"Sree Someshwur.

(A dagger here, the mark of the Raja.)

By Muharaja Dheeraj Sree Raja Baj Buhadoor Chund Devjee: (the 7th from Kulyan Chund.)

In Barmundil (pergunnah, and village,) Royetee, two alees were heretofore (dedicated) to (the above) deity. Having measured two and a quarter ($2\frac{1}{4}$) alees of the unoccupied land, with the banks of the Kosee (adjoining) there are (now) four and a quarter alees (dedicated to him.) To this land appertain the streams, mills, together with the woods and grounds temporarily reclaimed; all taxes are remitted; all disputes dismissed; all griefs discharged; fines for illegitimate births; rights of reversion (on extinction of families); what may fall from heaven to beneath hell; dues to horsemen, dog-keepers, hawk-keepers, musicians; all taxes have I relinquished. Having made (an inscription to this effect on) a copper plate, I have offered it according to my previous vow: (in consideration of the above) provision for the food of the deity, (is to be made as follows.) Four seers of rice, half a seer of dal, one tuka weight of ghee, one pysa weight of salt, incense, sandal, with the eight perfumes, one tuka weight of oil for the lamp for presenting the food in good remembrance of the presence (the Raja.)

Witnesses. Roodur Dev, Luchmeedhur Panre, Beesee Sugutee Gosayun, Bykunt Poorkho Joesee, Nurayun Sahoo, Kasee Adeekaree, Sutroo Sinh Karkee, Negee of Barmundel, Pudarut, Bagyoot Bhundaree, Nukool Sejalee, Kaira Bora. Written by Bhub Dev Joesee, year (of Salivahun) 1570, second day of the dark half moon of Phalgoon; engraved by Gopal Sonar. Place Rajpoor (Almorah.)

(Sloka.) The gift of himself or another whoever shall resume, seven thousand years may he be a worm living in ordure.

May you be happy and prosperous."

9th May.—To Lodh, about 6 miles, nearly west, up the wide and

beautifully cultivated vale of the Salee river, which rises in and about the level neck of grassy land connecting the Bhut Kot range with the Eirce Deo Hills (Thoee Deo of the map) to the south. The path lies amongst the fields, and is not good. On each side the woody mountains rise in a thousand picturesque forms; in one of the southern glens, near a village called Chinoulee, amongst extensive groves of cedar, is the shrine of the rural deity, Chetr Pal—the Protector of the fields. Towards the end of the stage, the great rounded summit of Doonagiri appears right ahead, to the west, and from Lodh itself, and the hills to the south, there is a good view of the craggy ridge of Bhot Kot, stretching from N. W. to N. N. W. and north; called three coss, about 5 miles, distant; 4040 feet above the village, the elevation of which is 5180 feet above Calcutta.

Lodh is but a small village, a little way down the eastern side of the neck above referred to, which divides the pergunnah of Bora ke rao to the east, from that of Kyra ke row to the west. On the grassy summit of the *col* are some erect stones, resembling those in the Druidical circles; the western declivity of this neck is steep; at its base flows the Dhoulee river, which issues by a tremendous gorge from the great southern glen of Bhot Kot, and pursues its way to the west to join the Gugas, the easternmost affluent of the Ramgunga.

The people of Lodh possess considerable numbers of cows and buffaloes, but do not visit the Bhabur. Amongst the fields, I noticed the cotton plant cultivated to a considerable extent. From its open site, the village enjoys more and cooler air than Someshwur; but the flies were equally countless and tormenting.

10*th May.*—To the summit of Bhot Kot and back again. The atmosphere was hazy as we ascended, and we had scarce breakfasted on the summit, before the clouds began to collect in the N. W. and thoroughly closed the view, which must be one of the grandest in Kumaoon. Thermometer at noon on the summit 72°, in the shade; $2\frac{1}{2}$ hours after, the storm burst heavily, thunder, lightning, rain, wind, and very large and copious hail, under the auspicies of which we effected the descent: the rain continuing till 7 P. M.

The ascent lies north from Lodh, along the brink of the precipitous gorge of the Dhoulee; we ultimately descended 300 or 400 feet to this stream, and crossed it, beyond which there is no vestige of a path; but

there are no difficulties beyond the excessive steepness of the acclivity, which, for one pull of 1500 feet is sufficiently great to render the hands almost as useful as the feet. To this succeeds a long, and finally very narrow ridge of rock, and then another, but a shorter steep ascent leads to the summit. The whole mountain is composed of quartz-rock, craggy, but not precipitous on the route, except the defile of the Dhoulee. The summit comprises a level ridge from 200 to 300 yards long, but is not marked by a temple of any kind. To the west it falls rapidly for 2500 feet or so, forming a deep neck, beyond which, bearing W. by N. is the Pundooa Khol, the craggy central bluff, perhaps 8500 feet high, seen from Almorah between Doonagiri and Bhut Kot. Between the Pundooa Khol and Doonagiri, in a densely wooded recess called Lodh Moona, rises the Gugas, which from the summit of Bhut Kot is seen flowing for many miles due south, to join the Ramgunga, here known as the Ruhut and Ruput.

Two or three miles N. E. of Bhut Kot, but separated by a precipitous rocky neck, is the nearly equally elevated ridge of Boora Pinnath, which contains the sources of the Kosilla, and is consecrated by a temple of Muhadev. Between these lofty points, the mountain sends down a precipitous spur to the S. E. on which is the high bluff called *Kourhia*, the ramifications of this run down to Lodh. On another point, which lay to our left as we ascended, is the hamlet of Oodehpoor, with a temple to Goorl Deo, the same who gave name to Goorlchour, the old cantonment of Chumpawut, and from whom the Limonia laureola is named Goorl-puta. Bhut Kot is well wooded to the summit; the northern side of the whole range is indeed covered with the densest forest. The ascent commences with Pinus longifolia, then Quercus incana, lanata, dilatata, and for the last 1500 feet Quercus semecarpifolia in abundance. Rhododendron arboreum reaches the summit, where we also meet with the Gaultheria nummularioides, and in the glens to the north, Pyrus lanata and vestita, Cerasus cornuta, Kadsura grandiflora, Lonicera Govaniana? and another, Symplocos cratægifolia, Anemone discolor: but the storm prevented any efficient investigation. The Pundooa Khol possesses the Pœonia Emodi; and there, as on Pinnath, Sutboonga, and Motesur, between 7000 and 8000 feet, in shady localities, is to be seen the Xanthoxylon oxyphyllum of Mr. Edgeworth, which, generally a weak straggling bush, exhibits itself in

its perfection as a strong scandent shrub, climbing from 30 to 40 feet or more, up the forest trees. Very many of the Cheer Pines on Bhut Kot, and indeed generally in Kumaoon, have their fibres spirally twisted to an extraordinary degree: the natives attribute the phenomenon to the action of the winds. The straight and more useful trees are called by them "Sapin," which signifies *straight*, one of the meanings of the Sanscrit *Surul;* a curious coincidence with the French Sapin: though less so perhaps, than that of *mirage* and the Sanscrit equivalents *Mrigutrish*, "thirst of the deer," deceived by the appearance of water and *Mureechika* "resembling light." The bark of the Cheer is employed almost exclusively in the smelting of iron-ore in outer Kumaoon.

Having afterwards visited Boora Pinnath summit from the eastward, it may be as well to note here its vegetable peculiarities, being in reality the same mountain as Bhut Kot. Though from 400 to 500 feet lower, it abounds with the Picea Pindrow, which continues a long way down the glen of the Kosilla, forming, with the following, one of the densest forests I have traversed; this is the nearest point to the plains at which this fir is met, the direct distance being about 35 miles. Associated with it are the trees enumerated on Bhut Kot, of which the Kilonj (Quercus dilatata) here attains a size and beauty rarely seen. Just below the summit, a large tract of rich shaded soil is covered with Aconitum læve, now in full bloom, as is the Nigala, or Hill Bamboo, which forms impenetrable thickets. The Ribes acuminatum (or glaciale?) black currant; Taxus baccata, Strobilanthes Wallichii, Limonia laureola, Stauntonia angustifolia, Pavia indica, Wulfenia Amherstiana, Orobus luteus, Asparagus curillus, Uvularia Leschenaultii, Carpinus viminea, Berberis aristata, Eurya acuminata, Sabia campanulata, Caragana spinosissima, Ulmus virgata, Rosa macrophylla, and Brunonii, Daphne cannabina and sericea, several Lauri and Viburna, Evonymus tingens, Japonica, and ————; two maples, two hollies, one the common Ilex dipyrena, the other a species, (or variety of dipyrena,) not unfrequent in Kumaoon at about 6000 feet elevation, with a 4-seeded berry. The Gaultheria descends to about 7000 feet, at which elevation near the gorge of Kosilla, occurred a tree which appeared to be Andromeda formosa; at about 7500—8000 feet occurred a few stunted specimens of Chamærops, exactly in the same state as those on

the Gagur; the name hereabouts is Jhungra or Jugger: with them, and amongst the Pindrow firs and yew trees, one is surprised to meet the Dioscorea deltoides, "Goon," which, in shaded and wet localities, descends to about 6000 feet; its tubers, of a bright yellow inside, are employed to poison fish.

11*th May*.—To Dwarahat, about 10 miles west, a cloudy day with smart showers, which, as well as yesterday's storm, a knowing mountaineer told me, were caused by a number of marriages going on in the plains; but how the two facts were connected, he could not explain. Some confused idea of the figurative tempests said occasionally to brew in the matrimonial atmosphere may have been present to his mind, as well as the storms which are here also popularly believed to accompany the conjunction of sun and moon, or the "Lugn," or entrance of the sun into a sign. The people of Kumaoon compute falls of rain by various measures of weight and capacity; from a mana (half ser,) up to a nalee and puseree, the last being that which soaks the ground thoroughly, and such as we experienced to-day. Beyond this they keep no reckoning: it is "be-thikana."

They also measure time by weight (the chitak): no doubt from the use of the ghuree (clepsydra.)

The path follows the left or south bank of the Dhoulee to its junction with the Gugas, and is stony, and bad from the frequent watercuts for irrigation. The Cinnamomum albiflorum, now in flower, is abundant, and conspicuous by its young leaves of a delicate pink color. At the meeting of the waters, the vale is beautifully cultivated, by the inhabitants of two pretty large villages, Bint on the right, Bhutor on the left bank. The climate is sufficiently warm for the Bauhinia variegata, Dalbergia Ougeinensis, and several large Bombax malabaricum. Hence in a W. S. W. direction, there is a rather steep ascent of a thousand feet to the Ookhul Lekh pass, over the southern shoulder of Doonagiri; then a descent for about four miles down a narrow and pretty glen, and finally over extensive cultivated levels on which are scattered the villages of Dwara, "the Sublime Porte," of the *Kutyoors*: this is the name of the Pergunnah, Hath being that of the chief village: 5082 feet above Calcutta. In days of yore it was the residence of the Kuhtora or Kutyoor chiefs of Kumaoon, to whom popular tradition assigns the possession of the mountains from Joomla to the Ganges,

and the construction of 360 temples and 72 wells; of the latter one only remains, covered in by a dome exceedingly well built of cut stone. The temples are of the same material, and are scattered in groups and lines over the fields. They are of the usual pyramidal form, surmounted by the Turkscap ornament, with porticoes indifferently to the east or west. The greatest height is about 30 feet. They are of a plain style, but near the tank Shalde Pokhur, by a clump of date trees, and an old Sillung, are the ruins of a small, but elaborately carved temple, covered with sculpture representing gods, men, elephants, &c.; it is much dilapidated, and its graven images and stories lie scattered around. None of these edifices are any longer held in any respect; on the contrary, having been desecrated by the Rohillas, they are made available as hay and corn stores, being succeeded by a much more modern, and well-built temple, where Budreenath and his priests are well cared for. The Kuthoora would appear to have been a more liberal and powerful dynasty than any that succeeded them; the name may possibly be allied to that of the Kuttaur tribe of Siyahposhes, amongst whom also we find at Chitral the chief styled Shah Kutore; but they are generally considered Soorujvunsee Rajputs. No remnant of an inscription remains at Dwara, but a portion of one has been carried up to the shrine of Devee on Doonagiri, bearing date Saka 1105, A. D. 1029, which may be assumed as that of the temples.

On the Ookhul Lekh, the rock is quartz, which at Dwara is succeeded by gneiss, the strata rising N. E. towards Doonagiri; to the S. E. blocks like granite boulders are seen on the continuation of the Ookhul Lekh range. Doonagiri is composed of blue clay slate, with some quartz, apparently rising towards Bhut Kot, in the same direction as the gneiss; towards the eastern base of the mountain, there is a great deal of red Ochry soil, probably arising from the disintegration of the slates and quartz. Doonagiri as seen from Dwara, is a fine saddle-back mountain, its easy slopes covered with woods and clumps of Banj oak, interspersed with spacious glades of meadow. The summit may be about 2 miles distant from the bungalow, and is continued far to the N. W. in a range of nearly equal elevation. In a pretty cultivated dell along its S. W. side flows the Kotlar Nudee, of which the source is at Dwara from Doonagiri; the road to Lohba and Budreenath follows its course towards the Ramgunga, beyond which the lofty range called

Doodootolce attains above 10,000 feet elevation; another road leads via Palee to Sireenugger; there is also a route, though a bad one, to Kakur Ghat, near Munurs, on the Kosilla.

13*th May*.—An easy walk of two hours brought us to the summit of Doonagiri, elevated above Calcutta 7454 feet. The woods on the west side are chiefly of Quercus incana; on the summit, Quercus lanata, Iphisia govaniana, and Caragana spinosissima, (the last now in flower,) are found; the eastern side is wholly covered by Pinus longifolia, a tree which seldom allows a rival near its throne.

Doonagiri is said to be the "Dronachul" of the Poorans. "The mountain of Drona," the Military Preceptor of the Pandoos, who have left many traditions about here. The Pundooa Khol to the N. N. E. of this, derives its name from them, where the Gugas rises in the sacred forest called Lodh Moona, where Gugas Rekhi performed penance, erected lings, and by magic power, caused the springs of the stream, which since bears his name, to gush from the quartz formation. The people consider him identical with Gurg, the saint of the Gagur. Doonagiri was originally part and parcel of Ceylon, and was brought here, half way on the back of Hunooman, who getting weary or sleepy, the rest of the *trajet* was performed on a flash of lightning,—or Indra's rocket, as the people poetically call it. They affirm that the Philosopher's stone exists here, and several peasants cutting grass, have had their *Koorpees* turned into gold by accidentally striking it; a fiction probably connected with the Jwalamat grass (Anthistiria anathera,) which grows here, and has luminous roots.

The summit of the ridge is rounded, and affords easy and pleasant walks, especially to the north. The loftiest point is occupied by a celebrated shrine of Devee, which however consists merely of a small and simple roofless enclosure, containing two small slabs of stone, believed to have placed themselves here spontaneously,—with a small sculpture representing Muhadev and Devee; evidently from Dwara. From the same quarry are two broken pieces of carved stone, containing a portion of an inscription bearing date 1105 Saka: but so far are the people from believing these were brought up from Dwara, that they are persuaded the fragments were rained from heaven (akash se burkha.) The officiating priest, however, set small store on the heavenly gift, for he sold it for four annas to my fellow-traveller, who was

desirous of decyphering the inscription at his leisure, and actually carried it to Lodh; there however, the whole countryside assembled to reclaim their goddess, which was freely restored with mutual explanations, my friend shewing them it was merely a bit of some old edifice, and they assuring us that it had fallen from the skies. Their extreme docility in these matters is indicated by such a government under a Queen Log; in Kunnawur, the inhabitants require being kept in order by the most frightful images of alligator and tiger-headed monsters, and Chimærus with a hundred arms, disemboweling and devouring their foes. It is wonderful that the temporal rulers of the world should never have taken a hint from the sanctuary, and converted their menageries into active means for quelling the spirit of revolt; it is probable that a hundred lions judiciously loosed in Paris during the Three glorious days might have saved their master his throne; but hitherto, this engine of state has only been brought passively into operation, and by only two nations, the Chaldæans and the Romans, who were wont to feed their lions on the martyrs; but martyrs are rare now-a-days.

At the celebration of the Dusuhra, the inhabitants of the surrounding districts assemble at Doonagiri in considerable numbers for devotion and traffic; the existence of the fair, however, denotes a somewhat inferior rank in our "Dark Lady of Doona;" at Doonagiri, &c., her festival is supposed to be perpetual; and gifts are equally acceptable during all the twelve months. Returned to Lodh in the afternoon, and on the 14th to Somesur, where the heat is now becoming oppressive.

15th May.—To Pinnath village, the "Muth" of the map; distant about 7 miles: the first half up the right bank of the Kosilla, the remainder till, close to Pinnath, on the left. About three miles from this place, the made road turns up the mountain to the east, to Byznath, which is called 6 coss distant. The scenery is very lovely; hills of every size and form covered with oak and pine contrasting with the rich, though narrow belt of ripening corn along the course of the river, which, now reduced to a mere burn, flows along a ravine fringed with Rose, Whitethorn, Willow, Phulliant and Banj oak, Symplocos racemosa, Berberis aristata, Berchemia floribunda, Indigofera (*arborea?*) Photinia dubia; forming a delicious jumble of colors and scents. About 2 miles above Somesur, on the opposite bank, is the romantic hamlet of Jyoshee ka mulla, on a hill, with a Vallombrosian foliage of Walnut,

Deodar, Kharuk, Pomegranate, &c. Approaching Pinnath, we crossed a jutting spur on the left bank of the river by the Rooena Chheena; above this the valley again expands and is well cultivated for four or five miles to the N. W., where the Kosilla flows east from its source, but is turned S. E. by a range on its left bank, over which, near the angle, is the Hur Chheena pass, leading to Byznath. Pinnath village is half a mile beyond the Rooena Chheena, and is perhaps 5200 feet above the sea, and 3500 below the craggy summits from which it has its name. A colony of Gosains resides here in several very substantial houses, surrounded by trees. Six or seven of their successive Muhunts or Abbotts, are buried close by, each with a small dome over his remains, and a miniature ling as his only epitaph; perhaps as the symbol of his devotion to Siva, who, as Pinakeshwur, "Lord of the Bow," or Trident, gives name to the spot. The Bow is probably the moon's crescent, Siva being Somesur, or Lord of the moon. The monks here possess two brass plates, with Sunuds engraved, of which the following are translations by Major Sampson, whose transcripts of the originals are also annexed. The dates coincide with the foundation of Almorah, the rulers of which probably thought it expedient to endow or sanctify the source of the river which passed by their new capital.

(No. 2.)

Sree Peenakees.

(Raja's mark—a dagger.)

By Muharaja Dhiraj Sree Raja Oodeot Chund Dev.

An offering of land.

In Row Pergunna three alees in Dhamkurow; in Idiakot one alee in Dheolrow; these places offered (making together) four (alees.) In the Pergunna of the plains, Roodurpoor, I have offered (the village of) Pepuliyukan Oortawala; together with their streams, mills, woods, ground temporarily cleared, forests (and) mountains, have I offered for lighting a lamp without intermission. All taxes are remitted, disputes dismissed; fines for illegitimate births, rights of reversion, what may fall from heaven, to below hell, dues to horsemen, dog-keepers, hawk-keepers, musicians, grooms; all taxes have I relinquished and offered.

Witnesses Muharaj Koomar Sree Gyan Chund, Sree Hureehur Chund Gosayen, Beereshwur Pande Poorohit, Beereshwur Lukshmee-putee Pande Gooroo; Sree Nurayun Joo; Pruta Padeel, Juswunt Sing;

Arjoon Sing; Jeetru Bhan; Soojan Sing Goosahee; Ruma Pundit; Sreenath Adhikaree; Reekhee kes Josee; Urjoon Sahoo; Kheemkuran Sejwalee; the twenty-two thousand (inhabitants) of Barmundil; written by Bhub Dev Josee, year (of Salivahun) 1613, the fourth day of the light half of Phalgoon. Friday: Engraved by Gopal Sonar.

(No. 3.)

Sree Peenakeshwur. Sree Bhuwanee.

(Mark of the Raja, a dagger.)

By Muharaj Dhiraj Sree Raja Baj Buhadoor Chund Dev. By Sree Ranee Bisekmutee Jee.

In fulfilment of a vow, an offering of land to the gods (above named.)

In Mulleepuchecsee (Pergunna) in Idiakot (village) six alees, eighteen beesees in Rolena (name of a portion of the village lands) have we offered; (also) two alees six beesees in Loesul (village) instead of (the like already dedicated) in Akolia (village) in Tulleepuchecsee (Pergunna) have we offered for offering to Purmeshwur every day food, viz., five muna ($2\frac{1}{2}$ sers) rice for the food, one muna of mas dal, one handful of unbroken rice (for the teeka on the god's forehead;) half a pul (2 pice weight) of ghee for the lamp, half a pul of ghee for the incense along with the food; thus much for Muhadev's food. Four munas of flour, two puls of ghee, are to be offered to Devee Jee daily. To these lands are to appertain the streams, mills, woods, grounds temporarily cleared, (and) wastes; all taxes are remitted,—we have relinquished all; be they free from all disputes, fines for illegitimate births, rights of reversion, what may fall from heaven, to below hell, dues to horsemen, dog-keepers, musicians, watchmen; all these taxes have become Purmeshwur's. Let there be no hindrance. Witnesses Muharaj Koomar Sree Oodoo Chund Gosayee, Bisee Jugutee Rai Gosayee, Idhyakoont Poorkho Josee, Narayun Bhan Sahoo, Kasee Adheekaree Soor Sinh Karkee, Koomeroo Teragee, Suntokh Choudree, Dulputee Karkee, Saliwan Boro, Gourja Chakur, Pudarut Bhagyoot Bhundaree, Nukool Sejwalee. Written by Chinta Sahoo, year (of Salivahun) 1576, the 30th of the dark half of Asar, Sunday. Place Rajpoor (Almorah.)

Soobha Negee, Anunt Dev Josee. Engraved by Gopal Sonar.

The most remarkable circumstance in the last grant is that one of the donors should be of the sex, which however subject in all ages and countries, to the influence of the Josees, seldom in Indian documents, appears on the scene.

16*th May*.—To Pinnath temple and summit; home by the source of the Kosilla; which occupied 10½ hours' actual walking. The route to the temple, which is about half way up, follows a great spur, and except in one place where steps have been cut to facilitate the approach, is easy, with a deep glen on the left, through which flows the Deogar stream to join the Kosilla at the village. The temples are scarce worth visiting, but the site is pleasant; a grassy expansion of the ridge, shaded by some superb Kilonj oaks; the first is a small conical structure, 8 or 10 feet high, dedicated to Bhyroo; the main temple is close to this on the north, a square, slated edifice, with the door facing the south, and figures of rajas, &c., sculptured on the walls. The roof of the portico is formed by the Indian arch, and on its sides are represented the five Pandoos; the adytum is small, and contains nothing but one or two images of Muhadev and Devee; about 44 years since the original pile was nearly all overthrown by an earthquake, which sent most of the materials and apparatus bounding down the steep glens to the Kosilla. The place is only frequented in the rainy season and autumn, when in October, there is a mela. The want of water is poorly supplied by a cistern and several wells, 12 or 15 feet deep, excavated in the rock, the contents of which are by no means inviting. The elevation as given in the map, is 7,111 feet, which seems correct; but elsewhere (Asiatic Researches, &c.) Captain Webb quotes it at 7628 and 7700. So far, the rock is quartz, and slate, but onwards quartz only, disposed in vast beds, the outcrop of which faces W. S. W. forming crags which near the summit are rather difficult to climb over. The area of this is not above fifteen feet across, with precipitous glens all around, and an exceedingly narrow rocky ridge connecting it with Bhut Kot, which seems about 500 feet higher, bearing S. W. The Boora Pinnath range is continued N. W., in a very lofty and comparatively level spur, called Birchoola, not under 8000 feet, excessively precipitous to the left, or W. S. W., but on the right sloping gently, and clothed with dense forest of Pindrow fir and other alpine trees of magnificent dimensions and verdure; in this is the main source of the Kosilla, which hence flows nearly due east for about 5 miles, its northern bank being formed by the slopes of Gopalkot mountain, on whose craggy summit the Kutyoora rajas had a stronghold in which their treasures were deposited. The waters between Bhut Kot and

Birchoola form a considerable stream which joins the Ramgunga, a few miles short of which it passes through a crater-like cavity, now nearly dry, but full in the rains, called the Turag ke Tal, or Lake of the Pool. It is seen from Boora Pinnath, and is 4028 feet above Calcutta. Mr. Batten found that this pool owns its existence to a high natural dyke of limestone conglomerate, through which the stream flows by a series of caverns, from one of which it issues in a fine cascade.

Beyond Gopalkot, the Birchoola range is crossed by the Burm Deo Chheena, which is the pass betwcen Byznath and the Ramgunga; I only followed it for about three miles to a spot where the "Duree Panee," a good spring, rises close to the summit level and sends a stream towards the Turag ke Tal; from this point we dipped by a pathless and extremely steep fall of a thousand feet to the apparent source of the Kosilla, now perfectly waterless, nor, for two or three miles down does its bed contains any thing but occasional pools. Hereabouts we came on several traces of bears and tigers, and on the half eaten carcase of a deer. The woods are so dense, as quite to exclude the sunbeams, with thickets of hill bamboo, &c. almost impenetrable. In a few miles, the course of the river becomes no longer practicable; the stream entering an extremely narrow and deep gorge, in which it flows for two or three miles, till it emerges on the valley of Pinnath; on each side of the entrance, the quartzose strata rise vertically and form two grand and most jagged portals, the bases of which as well as the gorge itself, are exquisitely wooded. The Kosilla here pierces the bearing of the range from Doonagiri N. E. These rocks are known by the name Sutulia or Chetulia, which is that of the mountain here forming the left bank, to the summit of which, at least a thousand feet above the river, we gradually ascended, by a very narrow path, with vertical steeps beneath; this is called the Shookona pass. The summit commands a beautiful view of Pinnath valley to the S. E. on the left hand, and in front stretches the spacious and level valley of Kuthoor or Kutyoor, with Byznath in the centre, at the junction of the Gurool with the Gaomutee river. The elevation is 3545 feet above Calcutta; the climate is said to be hot, and the air unhealthy: yet the cultivation seems extensive, and is said in former days to have reached far up the neighbouring hills, now covered with Pine. The place is still distinguished by the finest temples in Kumaoon, though much ruined by

the Rohillas ; near these the fish are religiously preserved, no doubt in honor of the Matsya avatar ; it is curious enough to discover the same superstition amongst the ancient Syrians, as noted by Xenophon in the Anabasis.

With frequent falls to all hands from the quantity of *pirol* or pine-leaves on the ground, we descended to the Kosilla and crossed it where it quits the Sutulia gorge between two huge crags. A mile or more lower down, on the right bank is Kantulee village, 5395 feet above Calcutta (R. S.) where the Sugar-cane is largely cultivated. Pinnath (Muth) Hamlet is two miles farther down.

18*th May*.—From Somesur to Gunnanath, 6 or 7 miles, the first two along the left bank of the Kosilla, crossing the Munsaree Roul, and then up the pretty dell of Khylkhoor watered by a stream from Gunnanath. Near its confluence with the Kosilla stands a grove of cedars, sacred to Kshetr Pal ; a little higher up, on the same (left) bank, dwells an "Olia," or Hail-man, "Indra-ka-bhugut," whose duty, for which he is well fed, consists in the repetition of "munturs," or, in extreme cases, pouring out libations of his own blood to Jupiter Tonans, in order to protect the crops from the hail. Lightning conductors would, perchance, be more effectual than both Tonans and Wizard ; for, in spite of all his incantations and cuttings, and this sacerdotal guano with which he sprinkles the fields, the hailstorms are very destructive in Kumaoon : during this very month, the entire rubbee crop of the Kupkot valley was levelled with the ground, and abandoned to the cattle ; on the 20th of October following, a hailstorm from the N. W. fell on the province, including Almorah, killing birds, the lesser cattle, and breaking down the little vegetation there remaining. It came on about 3 P. M. like *one* of Milton's "two black clouds with heaven's artillery fraught," in the form of a stupendous arch, which rapidly overspread the sky, and, depositing a thick stratum of hail on the ground, passed over in about half an hour. This storm extended its devastation as far south as Banda in Bundlekhund, and probably much further. The foul weather, which we experienced on Bhut Kot, was also very general over India, which probably shares in all the greater atmospheric changes of the Himálaya.

Daily observation in these mountains, commends the sagacity of the European Philosopher, who, in his distant study, detected and unravel-

led the tangled proeesses of thought and practiee, whieh maintain the Olia and similar swindlers. "Ayant eprouvé que certaines pratiques envers ses semblables avaient l'effet de modifier a son-gré leurs affeetions, et de diriger leur eonduite, il employa ees pratiques avee les êtres puissants de l'univers; il se dit; "quand mow semblable, plus fort que moi, veut me faire du mal, je m'abaisse devant lui, et ma prière a l'art de le ealmer. Je prierai les êtres puissante qui me frappent; je supplierai les intelligenees des vents, des astres, des eaux, et elles m'enteudront; je les eonjurerai de detourner les maux, de me donner les biens dont elles disposent; je les toueherai par mes larmes; je les flêcherai par mes dons, et je jouirai du bien-être.

Et l'homme, simple dans l'enfanee de sa raison, parla au soleil, a la lune; il anima de son esprit et de ses passions les grands agents de la nature; il erut, par de vains sons, par de vaines pratiques, ehanger leurs lois inflexibles: erreur funeste! Il pria la pierre de monter, l'eau de s'elever, les montagnes de se transporter, et substituant un monde fantastique au monde véritable, il se eonstitua des êtres d'opinion, pour l'epouvantail de son esprit, et le tourment de sa raee." Les Ruines, C. xxii.

If there be but one step from the sublime to the ridiculous, a step in the opposite direetion leads to superstition; whieh seems to enslave the mind of the mountaineer in the same degree as "the mountain Nymph, sweet liberty," emaneipates his person; the grand seale as to quantity, number, foree, and variety, on whieh all the proeesses of nature are earried on around, seems universally to have quelled his spirit to the most abjeet submission to the marvellous and supernatural.

From the enehanter's home, our path gradually aseended the sloping southern faee of Gunnanath, amongst Pine, and a profusion of Combretum nanum; on the right hand, aeross the Khylkoor, is the woody range of Bhalkot, on whieh Hustee Dul, the Gorkhalee Governor of the provinee was killed in 1815. It is eonneeted with Gunnanath to the N. E. by a low and spaeious plot of grassy land, ealled Gunes ka Tul, from whieh the Khylkoor flows to the west, and the Takoola, also draining the south faee of Gunnanath, to the east and south, where it waters the Sutrali valley.

Gunnanath mountain extends from east to west about $2\frac{1}{2}$ or 3 miles, and is composed of a kind of iron clay slate (or greenstone?) with a

ferruginous quartzose breccia; towards the Somesur foot of the mountain, Lieutenant R. Strachey came on large masses of black basalt. The southern face is rather bare, but grassy, with a continuous declivity, seamed by many rounded, and comparatively shallow furrows; the northern face, on the contrary is very steep, covered with Rhododendron, pine, banj oak, &c. Some of the latter also flourish in groups towards the eastern summit, offering admirable specimens of this tree in its perfection, with a magnificent spreading crown, almost reaching the earth all round. The temple of Malka Devee, small and in ruins, occupies this end; on the western extremity, 6,930 feet above Calcutta, Hustee Dul erected a stockade of which traces remain; but the position was bad, without water and of easy access from the east, the whole summit affording a nearly level and very pleasant walk, over swelling lawns, possessing much of the character, though not quite the breadth of an English Park; with a view of Emodus such as no Park in the world can pretend to.

The shrine of Gunnanath nestles in a snug nook on the southern exposure of the mountain, in one of the furrows before mentioned, nearly 600 feet below the summit. Here the rock forms an overhanging crag of perhaps fifteen feet, from which a streamlet trickles down, and is received in a reservoir shaded by laurel and Sillung trees. Under the rock repose the images of Gunes, Devee, the Ling, &c., duly beflowered and begheed by a rather strong establishment of brahmans and gosaeens, who inhabit a substantial dhurmsala, included in the gully, and commanding a pleasant view of the fertile vallies beneath, on which, like so many eagles, they pounce at their prey.

May 19th.—To Hawulbagh, called 8 coss, about 13 miles. Descended to the Sutrali valley opposite Unkholee or Umkesur, the usual stage between Almorah and Bagesur; and thence followed the Takoola to Bukona (not half the distance,) where we breakfasted by a mound sacred to Goorl Deo, and shaded by large Khuruk and Kukur trees. The rock here is mica-slate, but higher up, towards Umkholee, all gneiss. Below Bukola, the road becomes very rocky and seems not to have been repaired for many years: though hilly and uneven, there are none of the heavy ascents which exist on the direct route to Almorah. Opposite Koron village the mountains assume a most picturesque and diversified outline; here the road quits the line of the Takoola, and

ascends some hundred feet to the Moonee-moonee pass, on the crest of which there is a fine old newla or covered well, affording cool water, which none of the streams do at this season. From this we descended to the Patia valley, with many hamlets and good cultivation, lying along one of the Binsur streams ; and reached the Kosilla about three miles above Hawulbagh, opposite the neglected temple of Bumsir. One mile on, the road crosses the "Beemoota," a long and narrow rent 50 feet deep, in a stratum of mica slate, and dipping with it N. E.: tradition attributes the chasm to an act of Bheem Singh, which only a Hindoo traveller would commit to paper. About a mile east of Almorah town, 500 feet lower, on the open Gwalkakooree ke Dhar, about 400 yards east of the Dhamoo ka Dhoora garden, and south of Buldotee Quarry, Mr. John Strachey, C. S. discovered a smaller pit, also in the mica slate, about five feet deep, from which issues a considerable column of steam, marking the presence of a hot spring beneath. In the cold season, early in the morning this is condensed into vapor, which long since attracted the attention of the townspeople, who ascribe the origin of the phenomenon to this spot being a Sidh ka Sumadhi, or tomb of an ascetic whose body burns with the fervour of divine love. The Khusya population, however, assert that all such hot water is made by Devee. No religious respect is now shown to the spot ; on the 14th of November last, at $6\frac{1}{2}$ A. M. the temperature of the air being 40° ; that of the steam at 5 feet deep was 68° : beyond this it was impossible to introduce a thermometer, the crevice being too small to admit one's body, and at this depth altering its direction laterally. The growth of grass, ferns, &c., in the mouth of the pit proves that no deleterious gas accompanies the vapor: this test, however, will not hold for Carbonic acid gas.

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